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conserve it for the future

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Cover Photo: A woman of Kachchh in her traditional attire. Behind her, the house wall is decorated with the Harappan script characters and design of a Harappan seal (Source: Ravinder Kumar, Senior Photographer, Archaeological Survey of India, 2009)

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EDITORIAL

Dear friends,

Over the last few decades, a huge fraction of heritage properties in India have faced constant abandonment. If one looks back in time, an unbreakable bond between the monuments and the neighbouring societies especially during the monarchy system can be identified. In old times, there wasn't just the historical sites and cities which represented history but also the inhabitants of these heritage areas. However, if we look today, slowly and steadily the connection between the heritage and societies has almost been vanished.

In the past, people were specialised in a number of craftsmanship that played a vital role in preserving traditions and heritage from getting extinct. But day-by-day the falling demand of traditional arts and cultural skills has led to large scale unemployment. Currently, there are numerous heritage conservation projects taking place in India but only a few are considering the point of community-based development. There are examples like Egypt and Zanzibar where societies are working in tandem with heritage managers, archaeologists and conservators for preserving and restoring their heritage. If other countries can do it then why can't we plan large community-based development projects?

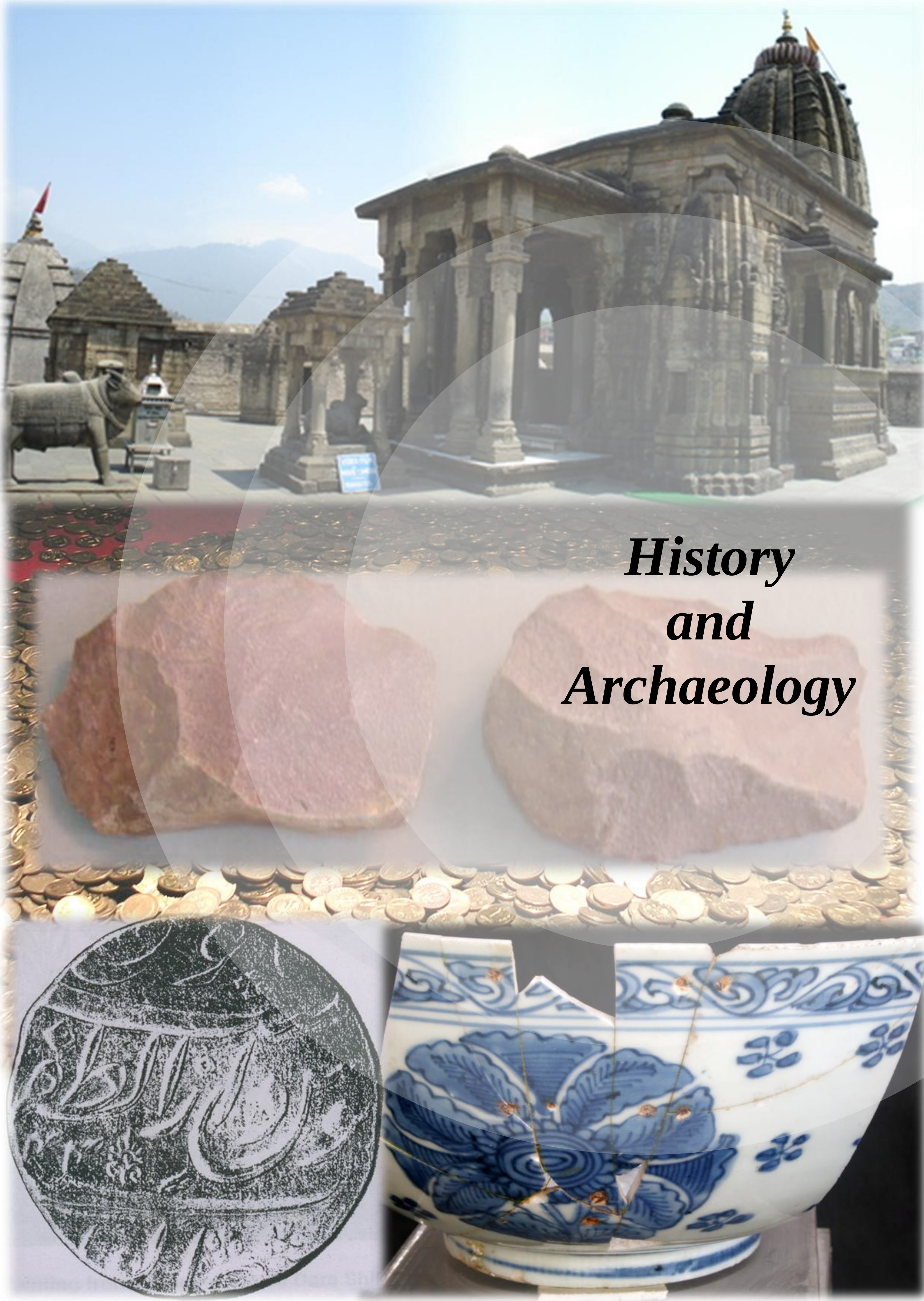
Looking at the present scenario, it has become essentially important for us to revive the long lost relationship between heritage properties and the societies. For doing so, we need to create awareness and a sense of responsibility among people regarding the cultural heritage. Considering the immediate attention, we started this e-journal in August 2012. Indeed, it feels great to inform you that our team was surprised to see bulks of comments and suggestions from many of you after the release of first issue. We truly appreciate your response and advise. It gives us the motivation to improve further. As we have mentioned earlier, this forum is open to all. We would be happy if you share your views regarding heritage through this e-journal.

With a great enthusiasm, we present the second issue of ***Heritage and Us****. This issue include a wide range of articles which cover certain aspects of archaeology, history and conservation of cultural properties. The edition also includes a photo-feature on one of the renowned world heritage monuments of Delhi - Humayun's tomb. Overall, I am sure you will find it quite educative and informative.*

Enjoy reading!

Arvind K. Dubey

History and Archaeology





Art and Architecture of Kangra Temples: Special Reference to Baijanátha Temple

* Nidhi Saryal

The creation of buildings evolved out of two important factors i.e. needs and means. The needs on one hand comprise shelter, security, worship, etc. and means include available building materials and attendant skills. This art of creating buildings is termed as architecture or *vāstu-shastra* i.e. the science of building. The Sanskrit word *vāstu* means the site or foundation of a house, site, ground, building or dwelling-place, habitation, house and *shastra* means science or doctrine.

Since old times *vāstu-shastra* in terms of religious constructions is regarded important and is represented largely through the concept of *vāstupuruṣa-maṇḍala*. It means that the temple is like a body of a human being. Here the 'human being' stands for the supreme power i.e. God. Therefore, every portion of a temple represents a human body part.

With the beginning of 1st millennium CE, two major styles of temples came into existence - the northern or nāgara style and the southern or dravida type of temples. They are distinguishable by the shape and decoration of their *śikhara* (spire or tower). A nāgara temple has curvilinear shaped *śikhara* while a dravida style of temple consist progressively smaller storeys of pavilions. The temples of Kangra follow the northern or nāgara style.

Location

Kangra is located in Himachal Pradesh, a mountainous state of northern India that came into existence on the September 1st, 1972 having five tehsils i.e. Jaisinghpur, Kangra, Palampur, Dehragopipur and Hamirpur. Kangra district derives its name from Kangra town, which was known as Nagarkot in ancient times. Kangra proper originally was a part of the ancient Trigratha (now Jalandhar), which comprises of the area lying between the rivers "Shatadroo" probably Sutlej and Ravi. A tract of land to the east of Sutlej, which is the

area of Sirhind in Punjab, also formed a part of Trigratha. Ancient Trigratha had two provinces one in the plains with headquarters at Kangra and other at Jalandhar.

Historical Records

Himachal Pradesh has been famously called the valley of Gods or *dēva bhūmī* from time immemorial. The ancient literature testifies it to be the abode of Śiva, Pārvati, and her parents Himavān and Menkā along with other deities of Brahmanical and Buddhist faiths.

The genesis of these religious edifices marks the different eras of religious beliefs, changes in monarchy, infusion of new races with older ones, giving birth to new religious beliefs. There is a general dearth of written records of the early history of the region. Only a few numbers of scattered epigraphical evidence and the *Vaṁśāvalīs* are available which list the rulers of the areas like Kangra and Chamba.

The fort of Kangra was the seat the Katoch Rajas, a Rajput clan belonging to the Chandravanshi Kshatriya linage. The first legendary Raja of Katoch dynasty was Rajanaka Bhoomi Chand Katoch (4300 BCE). Though, the fort of Kangra was built by 234th king of Katoch dynasty, Raja Suskarma Chand Katoch (1500 BCE). In 1947 AD, Maharaja Dhruv Dev Chandra (last ruler of Kangra-Lambagraon) merges his estate with the dominion of India, when India gains Independence.

The later historical records on Kangra are mainly based on the copper plate grants, epigraphs and the Kashmir chronicles like *Rājataraňginī* some of which throw considerable light on buildings, renovations and maintenance of temples. Though the Muslim historians like Al-utbi (1120 CE), Ziauddin Burni (late 14th century CE), Maulana Sharafuddin Ali Yazdi in *Zafar Nama* (15th century CE), Yahya Bin Ahmad, Badrichath, Sheikh Rizku-lla-Musktaki (1142-1581 CE), Shams Siraj Alif in *Tarikh-i-Firuz* (1351-1388 CE) and Muhammad Qasim Hindu Shah Firishta in *Tarikh-i-Farishta* (1606-1607 CE) did mention about the region, however, their works highlighted only the destruction of the temples.

Classification of Kangra Temples

The Kangra temples can be divided into three different styles.

Dome Shaped Temples - These temples are bulbous having dome like structures and dates back to late 17th century CE. This style is a new addition to the old architecture of temples in the hills. The domes of this style are rounded, elongated or flat. The Muslim influence in the designing of these temples is quite apparent as brick and lime mortar have been used for construction, as compared with the stone or wood, which was abundantly used in the temples of hilly regions. These dome shaped temples are found in the regions of Bilaspur and Nurpur. Jwalamukhi and Brajeshwari Devi in Kangra district, Chintpurni in Una district and Naina Devi in Bilaspur district stand in this category.

Rock-cut Cave Temples - The rock-cut cave temples are situated at Masrur, a UNESCO world heritage site (8th century CE). The Masrur group of temples are located on top of a 2500 feet high hill range. The complex has 15 temples surrounding the central shrine. Many of these cave temples, located in remote areas are enshrined with *śiva-liṅga*.

Nāgara or Śikhara Temples - The name nāgara occurs frequently in the literary texts of '*Īśānaśivagurudeva-paddhati*' and the '*Samaranjana-sūtradhāra*'. The word nāgara means nagar, pertaining to a city or town. Another meaning of nāgara is universe (*viśva*). The temple; the universe in a likeness, is nāgara as its rests on the *nāga*, the *vāstupuruṣa*, who supports the universe and is *śesa* the remainder.

Nāgara temples of Kangra can be further divided into two types, which are -

Pyramidal Type - The Vaidyanath's temple at Baijnath (Kangra district) along with Laxmi Narayan temple (Chamba district) and Bajaura temple (Kullu district) are exquisite specimens of this type. In this style, the temples are found having a tower like conical formation built of stone and decorated with carvings. The top of *śikhara* has *āmalaka* (the circular sun-disc). Like a typical Hindu temple, this type of temple has a *maṇḍapa* (pillared porch) and *garbha-grihā* (sanctum sanctorum).

Latikā Type - These temples are similar in their architectural plan to the pyramidal temples, but differed in their structural designs from exterior projects stones arranged in the tier system resembling temples. The Śiva temple of Hatkoti belongs to *latikā* type and has same remarkable wood carvings.

The prominent temples in the district are as listed -

Śakti Pithas or Shakti Temples - Jvālāmukhi Temple, Vajrēsvari Temple, Ambikā Dēvi Temple, Āshapuri Temple, Bhaya Bhajini Temple, Chāmunda Dēvi Temple, Garbi Dēvi Temple, Śitalal Dēvi Temple, Jai Ambika Dēvi Temple

Śiva Temples - Indriśvara Temple, Siddhanātha Temple, Bhāgsunātha Temple, Nandikēśvara Temple, Ghanjar Mahādēva Temple, Kalēśvara Mahādēva Temple, Masrur Rock-Cut Temple

Viṣṇu Temples - Brajrāj Behāri Temple, Lakshminārāyan Temple, Lakshminārāyan, Lakshminārāyan Temple Complex, Murlimanohara or Rādhā Krishna Temple

Other Temples - Lākhā Mandir, Ruined Temples, Baba Balakrūpi Temple, Temple of Siddha Bairāga, Temple at Sūraj Kund, Kapāla Bhairava Temple, Thakrdvarā

Baijanátha Temple - A Study

The 13th century Mahādeva temple at Baijanátha is dedicated to Śiva Vaidyanath, Lord of Physicians (fig. 1). It is located at a distance of 36 km from Kangra on the Pathankot-Mandi National highway. The temple lent its name to the small town of Baijanath, originally known as Kiragrama, which is recorded in Śāradā inscription.



fig. 1 Himachal Pradesh: Baijanátha Temple (source: Nidhi Saryal, 2009)

Inscriptions or well-known Baijnath praśastis are incised on two large stone slabs in the temple of Baijanátha at Baijnath. Amongst the two, praśasti no. I give an account of the construction of a temple by two merchant brothers, Manyuka and Āhuka in the honour of Lord Vaidyañatha and records the donations made to it by some pious individuals. It is dated in the year 80 of the region of Jayachandra, the Lord of Trigaratha to whom the ruling chief of Kiragrāma Laksamanacandra owed allegiance. The date of praśasti is *sam jyestha sukla pratipat* corresponding to 2nd May 1204 CE.

The praśasti no. II contains a brief account of the baronial house of Kiragrāma to which Laksamanacandra belonged. It is dated in the Śaka 1126, corresponding to 1204 CE.

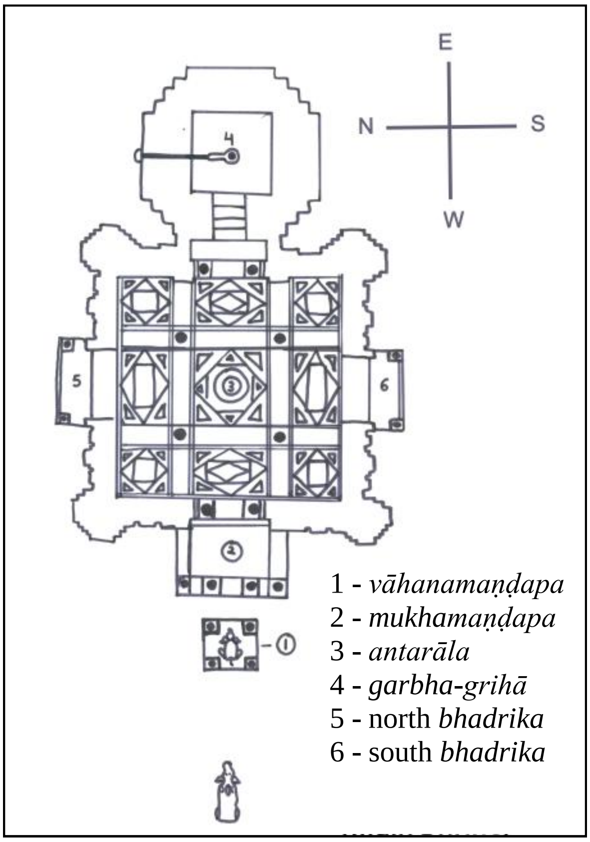
Architectural Details

Baijanátha temple faces west and stands in the middle of an enclosure of an irregular shape about 120 feet in length and 60-75 feet in width. The Baijanátha temple is situated on a comparatively flat plateau that shows an instinctive appreciation of the site. It seems like a small man-made mountain with its *śikhara* conversing arrogantly with the sky.

The proportions of the Baijanátha temple are remarkable features of the shrine. The carvings of *śikhara* stones, the artificial window and the sculptures are integrated into a monumental mass thus fussing architecture in sculpture and vice-versa. The central axis is so planned that the scooped out spaces for images project the indwelling power. This power is expressed through the collateral deities housed in the niches of the projecting buttresses. The shadow of niches relates back to the *garbhagrihā* sheltered beneath the *śikhara*. The total impact of the temple is heightened by the stone paved courtyard,



fig. 2 *Vāhanamaṇḍapa*
(source: Nidhi Saryal, 2009)



pl. 1 Plan of Baijanátha Temple
(source: Nidhi Saryal, 2009)

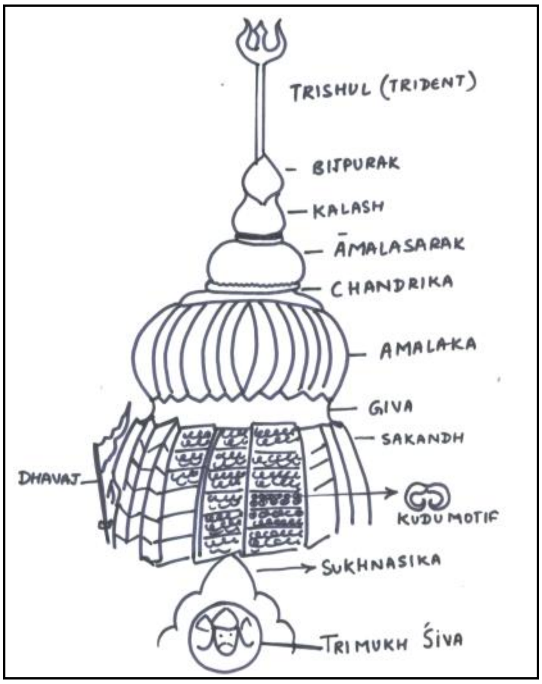
which provides the necessary space around the temple, as well as to absorb the lights and shadows from sufficient distance.

The temple compound contains a number of shrines scattered here and there. Three of these shrines are having pyramidal *śikhara* and one of globular type having a *śiva-liṅga* in sanctum. In front of the main shrine are placed two images of Nandi - the mount of Śiva. One of those in a standing position and bigger in size, is of later date, while the other seated in the *vāhanamaṇḍapa* supported by four pillars, belongs to an earlier period (fig. 2).

Plan

In the temple foreground, there is a *mukhamaṇḍapa* (front hall), followed by *ardhamaṇḍapa* (a closed hall which joins main shrine with an antechamber) and then *maṇḍapa*. The roof of *ardhamaṇḍapa* rests on four massive columns (pl. 1). The shafts of these pillars are plain cylindrical. The square plinth, the two torus's, the hollow moldings are all classical but partially hidden by Hindu ornamentation of great elegance. The capitals of the columns are decorated with pot and foliage design.

The roof of the *maṇḍapa* is supported by pillars connected with raised square benches, which form a passage leading to the entrance of the sanctum. The architraves resting on these pillars divide the space of the ceiling into nine compartments each one of which is closed by means of a slab. Both the north and south walls of the *maṇḍapa* are adorned with graceful *bhadrika* (balconies)



pl. 2 *Śikhara* of main shrine temple
(source: Nidhi Saryal, 2009)



fig. 3 God Brahmā
(source: Nidhi Saryal, 2009)

resting on two pillars on each side. The four corners are strengthened by means of massive buttresses like projections in the shape of half engaged '*śikhara* type temples', each containing two niches, in which images of deities are placed. Similar niches in slightly projecting chapels are found between the corner projections, the entrance and the balcony windows. The *maṇḍapa* ceiling has beautiful carvings.

The *śikhara* of the temple is having *skandh* (shoulder), followed by *grivā* (neck). Above *grīvā* are *āmalaka*, *candrikā* (series of discs), *āmalasarak* and a *kalaśa* (vase), above which is a *bījapūraka* (pl. 2). The top of the *kalaśa* or a pot/ vase is crowned by a *triśūla* or trident (an attribute of Śiva).

The *garbha-grihā* area is 8 square feet in the interior and 18 square feet on the exterior. The main deity enshrined there in is a *śiva-liṅga*.

The outer walls of the *garbha-grihā* or sanctum are enriched with three pillared niches enclosed in projecting chapels, each flanked by two niches of smaller size. The central niche in the east wall contains an image of Surya wearing a jacket. It is placed on a marble pedestal, which must have belonged to a Jaina image of Mahāvira as is evident from a nāgri inscription dated 1204 CE carved on its facets. The deities depicted in other niches, however, are not of great antiquity, some of which are described hereunder:

Brahmā - The four armed and bearded Brahmā is shown seated. He carries in his left hands a book and a vase. His right hands are holding a rosary and an indistinct object (fig. 3).

Durgā - Durgā is seen standing over a lion whose face is raised upwards. She is four armed. Her two hands on the right are holding a conch and a *gadā* (mace) while the other two hands on the left hold a sword and a disc. She wears



fig. 4 Goddess Chāmunda
(source: Nidhi Saryal, 2009)



fig. 5 God Kārttikēya
(source: Nidhi Saryal, 2009)

a crown, besides other ornaments like earnings, necklace, pendants, bangles, armlets, anklets and waistband. A miniature female appears to her left.

Chāmuṇḍā - Chāmuṇḍā, the goddess of destruction, stands in skeleton appearance, wearing a piece of cloth around her waist. Her legs are placed on the back of a corpse. She wears a head-dress and a necklace studded with human skulls. She is armed with eight weapons in her eight hands (fig. 4).

Kārttikēya - The four-headed god is seated on a peacock, having four arms. In his left hands, he holds a trident and a fruit, while in the right hands a lotus and an unidentified object. His *mukuṭa* or crown is adorned with five heads, which is quite unusual for the god (fig. 5).

Mahishāsuramardini - She has eight arms and is seen standing in *ālidha* posture, placing her right foot over the buffalo's back, from whose severed neck the *asura* (demon) in human form is emerging. She holds in her left hands a bell, a bow, a disc and the *asura's* head. In the right hands she holds a sword, a chakra, a trident and an arrow. She is bedecked with all the usual ornaments.

Gajalakshmi - The goddess is seen seated in *padmāsana* over lotus holding lotus stalks in two hands, in the *ardhaparyankāsana* posture with the left leg folded, while the right leg hangs downs. She is smiling and is bedecked with all the usual ornaments like earnings, necklace, armlets, anklets and *kinjalkini* - the long garlands of flowers. She is shown being bathed by two elephants standing on either side at the top.

Kalyānasundramurti - The panel depicts Śiva's marriage with Pārvati. Lord Śiva standing on the right is seen holding the hand of Pārvati in the act of *pānigrahana* which is obligatory in



fig. 6 *Garuḍa*
(source: Nidhi Saryal, 2009)

Hindu marriage. Brahmā, the officiating priest is seated before the fire. Viṣṇu accompanied by Lakṣmī is standing in the background. Horse headed Haiyagriva is also seated in front of the fire to the left.

Ganēśa - The dancing Ganēśa is found to be fixed on the base of the left panel of the porch at entrance. The unique features of this image are that the Ganēśa is shown with six arms and having lion and mouse as *vāhanas*. The panel also has three figures, each shown beating the drum.

The temple niches are also decorated with panels showing, three headed Viṣṇu seated in *bhadrāsana*, Trivikrama form of Viṣṇu, Śeshaśāya Viṣṇu, Hari-Hara, Umā-Mahēsvara, four armed Śiva, dancing Śiva besides Indra seated on an elephant and Indrāni seated on an elephant. Niches also have *garuḍa* (*vāhana* of Viṣṇu) (fig. 6), Varāha *avatāra* of Viṣṇu, etc.

Symbolism

Symbolically the temple has a sculpture of Nandi right in front of the *garbha-grihā* which is composed of *yoni* (*parākriti*) and *lingam* (*purush*). The eyes of Nandi are focusing on the lingam as he protects or safeguard Lord Śiva. According to a tradition, before entering inside the temple one should take permission from Nandi. Following this ritual, devotees take permission from Nandi by whispering in his ears before entering in *garbha-grihā*.

The temple symbolism says that the four *purush paritharan - dharma, arthā, kāmā,* and *moksha* could be attained in a temple. In case of Baijanátha Temple, the *dharma* is Nandi and *arthā*

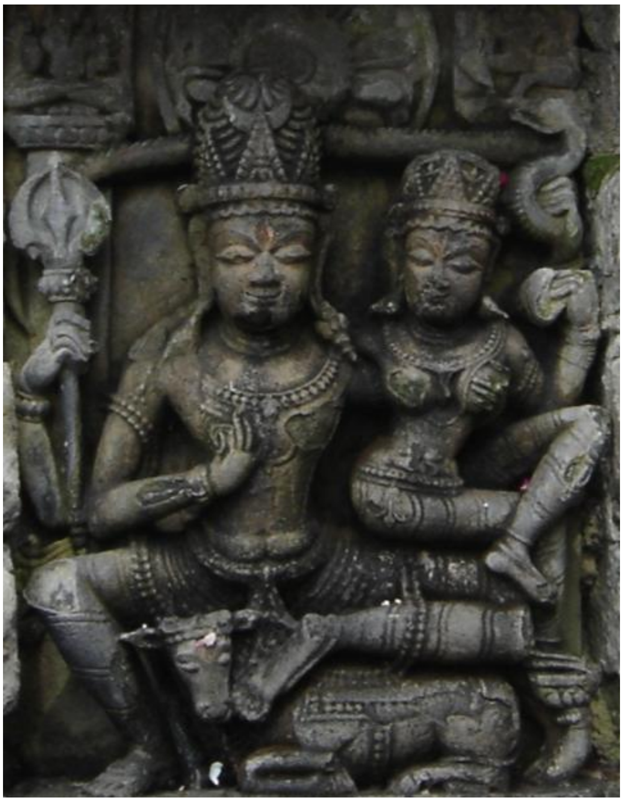


fig. 7 Śiva and Pārvati
(source: Nidhi Saryal, 2009)

is *nāga* that resides in *mahāmaṇḍapa* with Śiva and Pārvati (fig. 7). Both *nāga* and Pārvati (bhadra-kāli) protects the *mahāmaṇḍapa - lakṣmī chattar tang bal* i.e. one is safe in the hands of goddess Lakṣmī. Finally, *moksha* could be

attained within the *garbha-grihā* by those who have completed three *purush paritharan* i.e. the *dharma*, *arthā*, *kāmā*.

Panch Mahabhuts or five senses are always present symbolically in the temples same as in human body. The Baijanátha temple represents these panch mahabhuts i.e. kshiti, jal, pāvak/ agni, vāyu, āakāsh.

Agni - The sacred source of Indian religion is the *Ṛgveda*. The Vedic deities are measure to the physical phenomenon, which they represented. One of the dominated deity in the *Ṛgveda* era is agni, a male deity who is praised repeatedly throughout and indeed is the central vision of reality in the *Ṛgveda*.

Symbolically in temples, the agni is represented by *vedikā* or fire altars (on which fire is situated). The Agni is also known as the "mouth of God" and the offerings to the god are made by performing yagya. The cosmic diagram *maṇḍalaya* has two types of *Agni* - *Avahiniya* and *Grahasthya*. Agni in a temple is also represented by the lamp in the dark *garbha-grihā* which shows that life is still burning in blind darkness. Pundits and Pujaris holding fire lamps perform *nitaypujā*. At the Baijanátha temple, the agni is depicted through *vedikā* and lamps of *garbha-grihā*.

Jal - Baijanátha Temple is having a *kund* (pond) and River Khir Ganga which represents the *jal* (water). The other pictorial/ structural representation of *jal* in the temple are *kalaśa* on the *śikhara* of temple; aquatic elements and animals on the walls like fish, maker (crocodile), gaja (elephant), etc. Pot beneath the pillar, lotus and goddess Gajalakṣmī represents the feminine aspect of water.

Other two important depictions of *jal* are two river goddesses or two perennial source of water represented on the *dwāra* (door-jamb) of *garbha-grihā*, *kachchappa-vāhini* Yamuna (north) and *makar-vāhini* Ganga (south). *Nāgā* within the temple and *parnāla* (fig. 8) also represent the water kingdom.



fig. 8 *Parnāla*
(source: Nidhi Saryal, 2009)

Vāyu/ Sameer - The Baijanátha temple is having a *kīrttimukha* and ś*uknās* within the *mahāmaṇḍapa* which represents *vāyu* or *sameer*. The two *bhadrikas*, one in the north and other located in the south direction are made for the movement of air inside the temple. Celestials or flying *gandharvas* on the temple walls also represent *vāyu*. The *garuḍa* (Eagle) is the *vāhana* (mount) of Viṣṇu which represents *vāyu* or air. The Baijanátha temple has a depiction of *garuḍa-vāhana* Viṣṇu.



fig. 9 River Khir Ganga
(source: Nidhi Saryal, 2009)



fig. 10 View of Baijanátha Temple
(source: Nidhi Saryal, 2009)

Gagan - The bell in the temple represents two different worlds, space and time. This bell creates sound which is possible only because of space. The *dhawaja* (flag) in a temple also represents *āakash* or *gagan*.

Kshiti - It represents the skin (stone and bricks). The beauty of Baijanátha temple is depicted through the use of a fine stone, granite-gneiss. These rocks have been excellently polished. However, partly weathered varieties have also been used in many cases, because of the ease in chiseling, for the carvings - the rocks used in the carving of animal statues like Nandi (bull) and the seated bull are well foliated and partly weathered. The beautiful features of the Baijanátha temple are floral patterns and *nāgapushp* pattern made on the walls; *kudu* and *karna* type motifs on the *śikhara*, etc.

Temple was re-built by many like Raja Chand Katoch, who ruled Kangra from over half a century (1776 to 1824 CE). Some additions and re-constructions were also done by Sansar Chand or his family priest Gangā Rām as appears from the inscription in the temple courtyard and the material used which is a thick coating of lime. Later modifications and alterations were carried out by Raja Jaichandra of Jalandhar (or Trigarta). In 1905, the temple was again destroyed by an earthquake. Post earthquake, the pyramidal shaped *śikhara* on the *vāhanmaṇḍapa*, *mukhamaṇḍapa*, and *antarāl* were added.

Conclusion

Temple of Baijanátha is unique in itself. Baijanátha or Vaidayanath, the home of holy trio Śiva, Pārvati and their son Ganēśa in the Valley of River Khir Ganga (fig. 9) at a height of 1125 m had attracted several kings and their courtiers, artists and craftsmen resulting in a great deal of cultural interaction and giving birth to the monuments, sculptures and temples (fig. 10).

At present, the temple is under the jurisdiction of Archeological Survey of India (ASI). The present condition of temple is good and the committee of the

temple of Baijanátha looked at its management. The temple attracts a large number of tourists and pilgrims from allover India and abroad through out the year.

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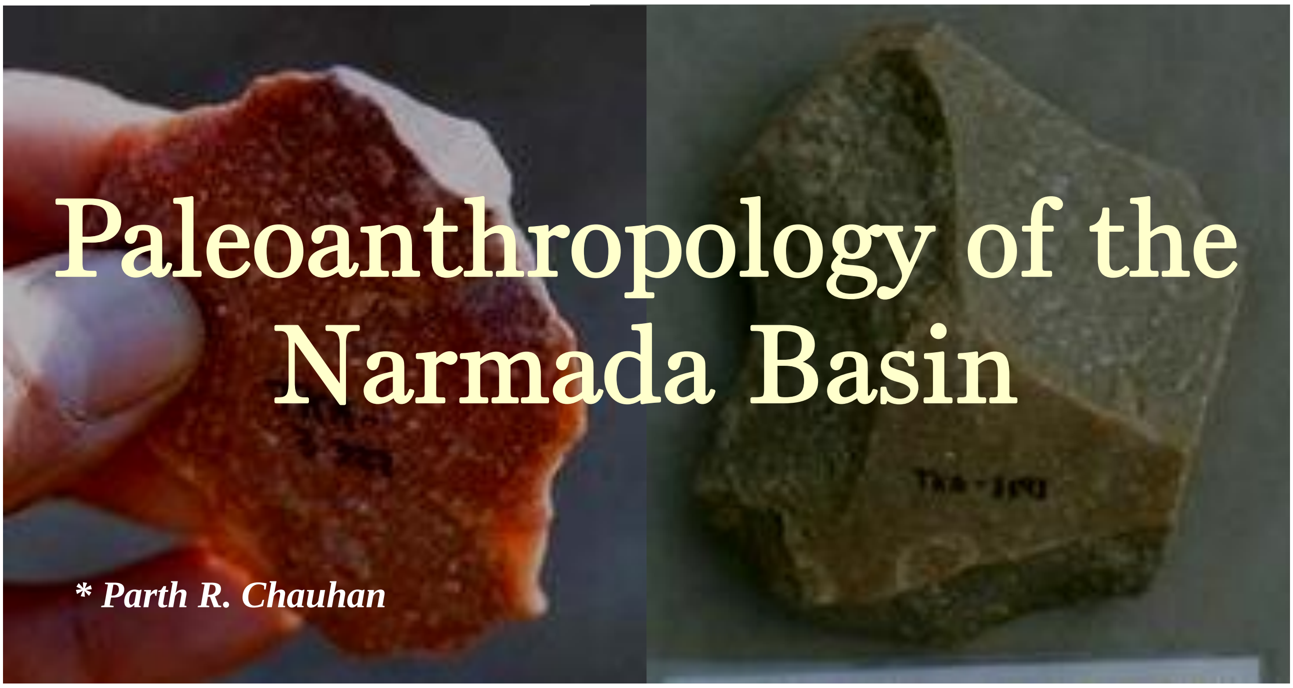
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Paleoanthropology of the Narmada Basin

*** Parth R. Chauhan**

When it comes to archaeology, most South Asians are not familiar with the time period prior to the Harappan culture which dominated the regions of Rajasthan, Gujarat and parts of Pakistan. It is necessary to remember that the Harappan culture evolved from prehistoric roots which have a long and dynamic history, not only in South Asia but also at a global level. Therefore, the study of our prehistoric roots or the time before the advent of civilisation is very important in order to understand the factors which enabled our biological, technological and cognitive evolution over time.

The Indian Subcontinent or South Asia is an important region to understand early human evolution because of its central geographic location in the Old World. For example, it lies between the earliest paleoanthropological evidence in Africa, Europe, China and Southeast Asia (Chauhan 2010a: 145-164). In order to appreciate this unique attribute of India, it is important to know the meaning of paleoanthropology and some general background information.

Introduction to Paleoanthropology

Paleoanthropology is a discipline that includes or utilises various sciences to understand human evolution from a holistic perspective. For example, a field project will involve different team members such as an archaeologist (studies the artefacts), a palaeontologist (studies the animal fossils), a geologist (studies the associated sediments from which the material is excavated), a geochronologist (dates the sediments and fossils), a paleobotanist (reconstructs ancient vegetation from pollen assemblages) and other technical staff such as photographers, draftsman and so forth. All these specialists work together to understand the evolution of humans from different perspectives. Some of the questions that are asked during the research include -

i) What environments and environmental conditions did the humans adapt to?;

ii) What kind of stone tools did they prefer and what were they precisely used for?;

iii) Which hominin species is represented at the site being studied?;

iv) How old is the site and how does it compare to similar evidence in other regions?; and

v) What environmental and related factors caused the arrival, occupation and extinction of these early human populations in the study area?

In other words, our heritage extends beyond artefacts and encompasses surrounding environmental landscapes such as the Narmada Basin and the natural resources that existed within it.

Since the beginning of paleoanthropological investigations or human evolutionary studies for over two centuries, we have a much better idea of what evolutionary and behavioural events transpired. For example, some of the basic facts we now know is that the cradle of the earliest human or hominin evolution was located in Africa. In fact, the majority of the last five million years of human evolution took place in different parts of Africa and can be divided into several geological time periods i.e. Pliocene (5.0 to 1.8 myr), Pleistocene (1.8 to 0.1 myr) and Holocene (roughly the last 10,000 years).

The Pleistocene and Holocene periods combine to form the Quaternary period. Prior to the Pliocene, the Miocene period accommodated the evolution of the apes and some of the earliest bipedal hominins. Prior to about 2.0 million years ago, all human evolution took place in Africa before early humans left the continent for the first time and since then, different phases of human evolution took place throughout all parts of the world including Africa, Europe, Asia and Australia. Table 1 shows the timing of key events in human evolution in relation to global and Indian records and some of these are described here (*see page 26*).

After the emergence of bipedal hominins in Africa between 5 and 7 million years ago, early humans began diversifying and existing in different groups and later as different species. At some points in time, there were at least two (and possibly up to four) species of hominins co-existing but living differently and separately from each other (Tattersall 1995). Based on the known fossil record today, we are now aware that at least 23 individual species of humans existed over the last seven million years. All of these species are represented by several genera such as *Ardipithecus*, *Australopithecus* and our genus *Homo*. The genus *Homo* first appears in the fossil record at about 2.5 million years ago and since then, multiple species have existed such as *Homo habilis*, *H. erectus*, *H. antecessor*, *H. heidelbergensis* and *H. neanderthalensis*. It is very possible that new species of *Homo* and older genera may yet be discovered in various parts of the Old World including India.

The large number of hominin fossils reflects that many of the species became

extinct due to various factors and ultimately one has survived: *Homo sapiens* or us. The oldest fossils representing our species occur about 200,000 years ago in Ethiopia in East Africa (McDougall et al. 2005: 733-736).

Paleolithic Stone Tools: An Introduction

As mentioned earlier, early human populations started dispersing or migrating out of Africa around 2 million years ago and the evidence for this comes from sites in the Republic of Georgia, Israel, China and Java (Larick and Ciochon 1996: 538-552). Though 2 million year old stone tools have also been reported from the Siwalik Hills of Pakistan, the evidence is controversial and requires better study (Chauhan, 2010). The remaining evidence in other regions is in the form of hominin fossils and/ or stone tools, sometimes in association with fossils of ancient animals with cut marks caused by the use of stone tools on them for meat-cutting. To appreciate and understand the dispersal behaviour of hominins within and outside of Africa, it is necessary to have some general knowledge of the related technological evidence. For example, at about 1.7 million years ago, Acheulean technology was invented and which showed that stone can be shaped into more complex and sometimes symmetrical specimens for more complex purposes. The Acheulean tool kit generally included handaxes, cleavers, scrapers, flakes, discoids and so forth and its main difference from the Oldowan was that flakes larger than 10 cm started to be exploited often from large cobble or boulder cores (fig. 2). Oldowan technology is generally associated with different human species. The oldest stone tools come from Gona, Ethiopia and are 2.6 million years old. They represent Oldowan technology (named after the site of Olduvai Gorge in Tanzania where they were first recovered) and include simple tools such as cores, choppers, scrapers and flakes (fig. 1). Because of its versatility, Oldowan technology or basic core-and-flake assemblages have been utilised throughout the Quaternary period despite more



fig. 1. Simple choppers, scrapers cores and flakes found in the Oldowan, the Soanian and other similar industries (source: P.R. Chauhan, 2004)



fig. 2. Acheulean handaxes, cleavers and chopper (source: P.R. Chauhan, 2005)

advanced stone technologies being invented as well.

Since bronze and iron were invented only within the last 7000 years, stone was the main raw material used to make simple and complex tools for various types of activities. These stone tools formed parts of different tool-kits which evolved over time and progressively became more specialised as behaviours and adaptations also became more complex with the evolution of *Homo habilis* and similar species while Acheulean technology is traditionally associated with *Homo erectus*, though the latter was exploited by different *Homo* species over time.

Early Human Dispersals from Africa

This knowledge of stone tool production and utilisation, and possibly combined with an adaptation to grasslands environments enabled early *Homo* species (such as *Homo erectus* or *habilis*) to leave Africa for the first time around 2 million years ago (Dennell and Roebroeks 2005: 1099-1104).

Traditionally, there have been two main theories for the evolution of modern humans outside of Africa: the *Out of Africa* theory and the *Multiregional* theory (Wolpoff 1999). The first and more dominant theory (Out of Africa) is that early human populations moved into various parts of the Old World from Africa soon after 2 million years ago and then these were later replaced by populations of *Homo sapiens* about 50,000 years ago, which also dispersed from Africa. The second theory (Multiregional) is that the earliest populations that left Africa and settled in the different regions respectively evolved into regional species of modern humans (for example, Chinese *Homo erectus* evolved into modern Chinese populations).

In recent decades however, we have learnt that the story of our evolution and emergence within and outside of Africa is much more complex than previously thought. For example, one problem scientists are currently having is pinpointing the earliest migration of *Homo sapiens* from Africa into other regions. It now appears that while we arrived into Europe at about 40,000 years ago, we may have arrived much earlier than that into South Asia (Dennell and Petraglia 2012: 15-22). Despite the two dispersal theories and many unanswered questions, one fact is clear: that hominin species left Africa repeatedly and there were probably multiple biological and technological dispersals within the last two million years. This is why it is important to study the paleoanthropology of the Indian Subcontinent as it geographically links the evidence of Africa, Europe, Asia and Australia and thus can yield valuable information regarding the earliest dispersals and adaptations of various *Homo* species over time.

Paleolithic Occupation of India

Prehistoric studies in India began over 120 years ago when handaxes were first discovered in Tamil Nadu by Robert Bruce Foote (Pappu 2001). Since then a large number of prehistoric sites have been reported from almost all parts of the country attesting to the lengthy

occupational history of South Asia.

Sites found belong to all three periods of the Paleolithic (Lower, Middle and Upper) and also numerous Mesolithic and Neolithic sites are known (Misra 2001: 491-531). All of these time periods have different stone tool kits and are found in diverse contexts including ancient lake shores, floodplains, on bedrock, in caves and rock-shelters. Some important Paleolithic sites that have been well-studied include Chirki-Nevasa, Bhimbetka, Attirampakkam and Isampur among many others. The oldest archaeological evidence in India belongs to the Acheulean industry since no convincing evidence for the Oldowan has been found. Although 'Oldowan' sites have been reported from the Siwalik Hills of Pakistan and India as well as the Narmada Valley, none of this evidence is scientifically proven (Chauhan 2010a: 145-164 and 2010b: 113-128). This may signify that either such evidence has yet to be recovered or that hominin populations arrived much later into the Indian Subcontinent. Future research and surveys, especially in the Siwalik Hills may reveal Oldowan sites as known from other parts of the Old World.

On the other hand a large number of Acheulean sites are known suggesting the presence of *Homo erectus* in India and the numerous younger sites (Middle and Upper Paleolithic) suggest the presence of early *Homo sapiens* groups here. Though the oldest South Asian *Homo sapiens* fossils come from Sri Lanka and are dated to about 30,000 years old, older evidence may yet to be discovered in the future. Current evidence shows that the earliest hominins arrived in India at least one million years ago and probably much earlier (Pappu et al. 2011: 1596-1599).

The Narmada Basin and Human Evolution in Central India

The Narmada hominin fossil is highly important because it is the oldest and only pre-modern human fossil known in India. Discovered at Hathnora by Sonakia in the early 1980s, it is paleontologically proved for the first time that there were early humans in South Asia prior to the appearance of modern humans in the region (Sonakia 1984: 159-172). In addition, it further highlighted India as a potential source for the recovery of additional hominin fossils in the future as well. This is very important because although the Hathnora fossil is a valuable contribution, missing features such as teeth and other post-cranial elements makes it difficult to pinpoint the precise species. Various researchers have respectively labelled it as *Homo erectus*, *Homo heidelbergensis* and archaic *Homo sapiens* (Athreya 2007: 137-170) and no further research may reveal its taxonomy or its age as it came from a cemented gravel deposit representing a mixture of material of different ages (Patnaik et al. 2009: 251-266). Thus more complete cranial and post-cranial fossil specimens are required.

The location of the Narmada Valley in central India is significant in relation to ancient human occupation of the entire Indian Subcontinent. The most important aspect is that it geographically links northern India and southern India and

provided one of the richest sources of paleoanthropological evidence in the region (abundant stone tools, vertebrate fossils and ancient pollen assemblages).

The Narmada Basin has well-known Lower Paleolithic Acheulean sites (such as the Raisen District localities), Middle Paleolithic sites (such as Samnapur) and numerous Upper Paleolithic sites and scatters (such as Mehtakheri). In some locations, there are continuous occupational sequences from the Lower Paleolithic to the Mesolithic such as the Bhimbetka rock-shelters. One reason for the continuous hominin occupation in the Basin (since at least the last half million years) is the abundant amount of resources in the form of stone such as Vindhyan quartzite, basalt of Deccan Trap and numerous quartz and chert nodules, and water in the form of the Narmada River and its extensive drainage system (numerous tributaries, ponds, springs and lakes). The stone raw material is found in the form of bedrock outcrops and in stream beds or as parts of terrace deposits. The large number of vertebrate fossils recovered suggests that the Narmada Basin was a host to many species of mammals and other animals which must have been exploited by the human habitants for food and other resources. Another factor that also probably played a major ecological role was the Asian monsoon which has been prevalent since the early Miocene or the last 18 million years as known from evidence in the Siwalik Hills (Retallack 1995: 36-51).

It is important to remember that the basin topography, bedrock and floodplain geology, drainage networks and hence the associated paleoanthropological



fig. 3 An Acheulean artefact *in-situ* in a section along the Narmada River (source: P.R. Chauhan, 2005)

evidence is diverse from region to region within the Basin. For example, the Upper Narmada Basin and its evidence are different from the Lower Narmada reaches. Because of the location of the Hathnora hominin evidence, more scientific attention has been given to the central part of the Basin, especially the main channel and areas very close to it. Recent work shows that interior zones away from the main channel have high potential for the recovery of less disturbed sites, especially close to the Vindhyan Hills where forest and stone/water resources overlap. Most of the stone tool assemblages in the Narmada Basin are found in various contexts such as on the surface of terraces or bedrock outcrops and also often stratified within ancient sediments of the ancient Narmada or its ancient tributaries. Closer to the main channel where the sections and sediments are all fine-grained sand and silt, artefacts though found frequently (fig. 3), are not

densely scattered, mostly due to the lack of stone raw material. Richer sites are found closer to the Vindhyan Hills where raw material occurs much more frequently and is more diverse. Nonetheless, the archaeological evidence shows that early human populations used almost all parts of the landscape including interior forest zones in the Vindhyan Hills as well as the flat ancient floodplains currently dissected by the main channel. Hominins exploited all of these places and discarded stone tools across the landscape after utilizing them. In many locations, geological processes such as the fluvial activity of the river and streams has accumulated



fig. 4 Stegodon fossils discovered during paleontological excavations in the Shakkar Nadi, a tributary of the Narmada (source: P.R. Chauhan, 2009)

stone tools and fossils, where only experienced geologists can distinguish between geological and archaeological occurrences. Unlike the stone tool assemblages, vertebrate fossils are found less frequently but are still abundant compared to other regions of South Asia. In fact, the Narmada Basin is rivalled only by the Siwalik Hills to the north in terms of high fossil yield. The Narmada fossils are often fragmentary and complete fossils of individuals are rare such as the *Stegodon* (ancient species of elephant) fossil recently found and excavated from the Shakkar Nadi (fig. 4) (Patnaik and Chauhan 2011: 251-266). Such complete fossils are scientifically more valuable than fragmentary fossils as they allow the study of the entire life histories of such individuals and also contribute to our understanding of the taphonomic or preservation processes involved. Such complete fossils also provide scientists with contextual attributes that ultimately help in recovering additional such specimens in good positions. This is crucial because such patterns of geological data also help scientists in explaining the frequent associations between stone tools and vertebrate fossils in the Narmada Valley. For example, are such association results of human exploitation of animals for meat or is the mixture of stone tools and fossils due to geological and fluvial processes? Another reason



fig. 5 General view of Hathnora (source: P.R. Chauhan, 2007)

to study such evidence from a holistic perspective is to reconstruct ancient hominin behaviours in relation exploitation of food resources.

Current debates about some of the earliest animal fossil and stone tool evidence needs clarification that whether early humans directly hunted the large mammals or mostly relied on scavenging from animals killed by other larger predators such as lions, tigers, leopards and hyenas. Further paleoanthropological research in the Narmada Basin and other parts of the Indian Subcontinent can help scientists answer such questions.

Future Directions for the Narmada Basin

Current problems in the paleoanthropology of South Asia include the lack of absolute dates for many Paleolithic sites, the lack of hominin fossils as compared to other regions of the Old World, and the lack of multidisciplinary long-term studies in single regions or sites. In the Narmada Basin, similar problems exist and since the region is a vast area, only a small percentage has been investigated and very little systematic work has been done. The region requires more focused long-term investigations comprised of numerous teams working in different areas of the Basin, especially due to the future submergence of critical areas from large-dam construction. These teams should involve specialists from different scientific disciplines so a complete Quaternary history of the Basin can be reconstructed in relation to human evolution and Basin development and climatic changes. Such multidisciplinary studies by different teams (working together) including experienced Indian researchers, foreign collaborators and enthusiastic students can yield rewarding scientific results.

In addition to this paleoanthropological

research, related work on similar sister disciplines can also be carried out to enable a more comprehensive picture of human evolution in the Narmada Basin. For example, regional tribal populations can be studied through specific ethno-archaeological projects to provide general insight into ancient hominin lifeways.

In conjunction with the paleoanthropological research to be carried out, specialists can also work with the local villagers in helping to preserve the rich archaeological and paleontological sites and protecting such heritage and natural resources from destruction through agriculture, construction and erosion. For example, such sites as Hathnora (fig. 5) require proper protection from the natural elements as well as from livestock trampling and fluctuating water levels.

All such work can result in better documenting and understanding a unique and beautiful region of India where our ancestors once roamed, hunted and evolved - the Narmada Basin.

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P.R. Chauhan is a paleoanthropologist specialising in the Paleolithic archaeology of India and obtained his academic degrees from the US, India and the UK. He is currently carrying out multidisciplinary research on early human occupation in the Narmada Basin through international collaboration between the US, India and Australia. This work involves archaeology, geology, palaeontology, palaeobotany, geochronology and related subdisciplines. He is also carrying out a similar project on human dispersals and adaptations in Yemen. All of this research has been funded by the National Geographic Society, Wenner-Gren Foundation for Anthropological Research, the Leakey Foundation, Fulbright Foundation and INQUA.

Table 1. Some key events in global human evolution (Ma = million years ago; Ka = thousand years ago)

5 to 7 Ma	Earliest hominins emerge in Africa and biologically separate from the apes
2.6 Ma	Oldest stone tools (Oldowan technology) at Gona, Ethiopia
2.2 to 1.9 Ma	First Oldowan dispersal out of Africa (into Georgia, Java, Pakistan?)
1.7 Ma	Earliest Acheulean technology emerges in Africa (Ethiopia)
1.5-1.07 Ma	First Acheulean dispersal out of Africa (Israel, India)?
300 Ka	First Neanderthals emerge (Europe and West Asia)
200 Ka	First modern humans (*Homo sapiens*) emerge (Ethiopia)
75 to 60 Ka?	Modern humans arrive in India?
50 to 45 Ka	Modern humans arrive in Australasia
45 Ka	Modern humans first reach Europe
25 Ka	Neanderthals become extinct
90-18 Ka	*H. floresiensis* (‘The Hobbit’) flourishes in Southeast Asia



Vithobā Figure on Aurangzeb Coin - A Critical Study

* *Shamoon Ahmad*

The coins of the Mughal empire have been issued primarily with Arabic and Persian inscription in *Nasq, Nastāliq* and *Tughrā* styles of calligraphy. The pictorial device has been depicted only on a few coins of Akbar and Jahāngīr. However, mintmarks, shroff marks and for the purpose of ornamentation one or more other designs have also been placed on the coins of the Mughal emperors.

A number of pictorial, mint marks, etc. have been mentioned and critically studied by various scholars in their works. C.J. Brown has drawn attention on more than 300 marks in the *Catalogue of Mughal Coins in State Museum of Lucknow*. However, no mark has been identified as live motif in Brown's table, or in any other catalogue as well. Ironically, C.R. Singhal published an interesting article in which he identified a mark as Vithobā, a much respected deity of Pandherpur in Mahārāshtra (Singhal 1963: 57-59) (fig. 1). God

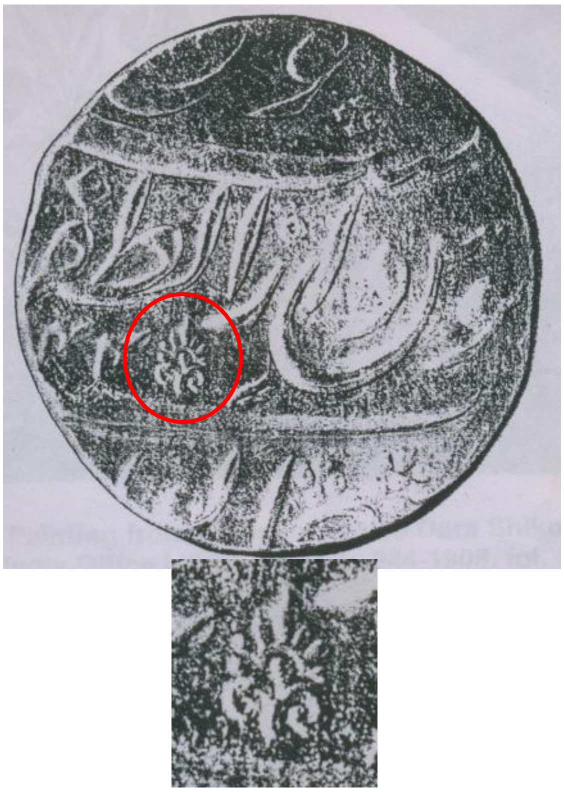


fig. 1 Coin with mark of God Vithoba as identified by C.R. Singhal (source: Journal of Numismatic Society, 1963)

Vithobā is one of the form of lord Viṣṇu who is always represented in the form of a young man with his hands on his hips. C.R. Singhal has published the coins of this very series in *A Supplementary Catalogue of the Mughal*

Coins in State Museum Lucknow
(Singhal 1965: 100) (fig. 2).



fig. 2 Coins of Aurangzeb showing mark of God Vi<u>th</u>obā as identified by C.R. Singhal
(source: Supplementary Catalogue of the State Museum, Lucknow, 1965)

The legend on the coins is as below -

Obverse	
Aurangzeb Álamgīr *<u>Sh</u>āh* *Zad <u>Ch</u>u Badr Munīr* *Sikkah* *Dar Jahān*	گیر زیب اورنگ ۱۱۱۱عالم شـــــــــــــاه منیر بدر زدچو ســـــــکه جهان در
Reverse	
Mānūs *Maimnat* *Zulūs Dārul Zafar* *Darb* *Bījāpur*	مانوس مـــیمنـــت دارالضفر جلوس ضـــرب ۴۴(a) ـــ ، بیجاپور

On the above coins a symbol over the alphabet *be* (ب) of word *darb*, which is shown here as '**a**', is described as the god Vi<u>th</u>obā, standing with his arms curving inside, towards the hips. He wears an ornamental *mukuṭa* or crown on his head. Singhal presume it that 'some devotees of Vi<u>th</u>obā, who might be employed in the Bījāpur mint in those years, must have found an opportunity to engrave this tiny mark. Being a tiny one, it escape the notice of everybody and these coins were into circulation along with the other coins of this mint' (Singhal 1963: 58).

Afterwards R.K. Sethi has reported three more coins of the same variety, having same legend as in C.R. Singhal's catalogue (Sethi 1968: 226-229).

Among these three coins, one is in Shantilal Pardeshi's collection and two in his own collection. All the three coins were issued from Bījāpur in AH 1108, 1110 and 1111 respectively. Here it may be noticed that Pandherpur is only 70 km far from Bījāpur. After examining, R.K. Sethi also attributed the design as Vithobā though he did not publish the photographs of the original coins. On this, P.L. Gupta disagreed and commented that it is just a mint mark placed on the coins by the mint master as his own distinguishing mark (Sethi 1968: 229).

On the comment of P.L. Gupta, arguments given by R.K. Sethi are as follows - "It is however, true that it has been distinguished as a flower pattern and quite correctly because otherwise it would have been apparent as Vithobā. But no flower of this shape is known in the botanical world. The lower petals or stems have been shown curled inside. If these are petals, then they could not curl so symmetrically. So also the seven petals form a crown. The lowest petals are small and one at the peak is longest. This is also not possibly belongs to the flower world. If it was in shape of a bud, then the petal would have been shown as folded and not straight as in mark. Similarly, the black dot in the middle does not represent the middle position of a flower. It is apparent from its depiction. It is like a cross section and in such a depiction; it should not be presented as it is shown. Therefore, though the pattern has been taken as a flower, still it is not a flower representation" (Sethi 1971: 137).

After going through the arguments and the counter arguments of the scholars of the subject, there is no option but to search the flower, which is depicted on the said series of the coins. Although this type of flowers are known in modern botanical world but it is more reasonable to go with Mughal sources than that of modern science books. In this respect paintings are most reliable source. A painting is found from Dārā Shikoh album, published by Percy Brown in his famous work *Indian Painting Under the Mughals* (Brown, 1924). This painting shows a floral plant in front of a Night Heron. The plant has three fully-blown flowers and four flower buds. One of the blown flowers in middle has a great resemblance with the given mark on this very series of coins of Aurangzeb (fig. 3). Petals of the flower are curling downwards in the same manner as in the

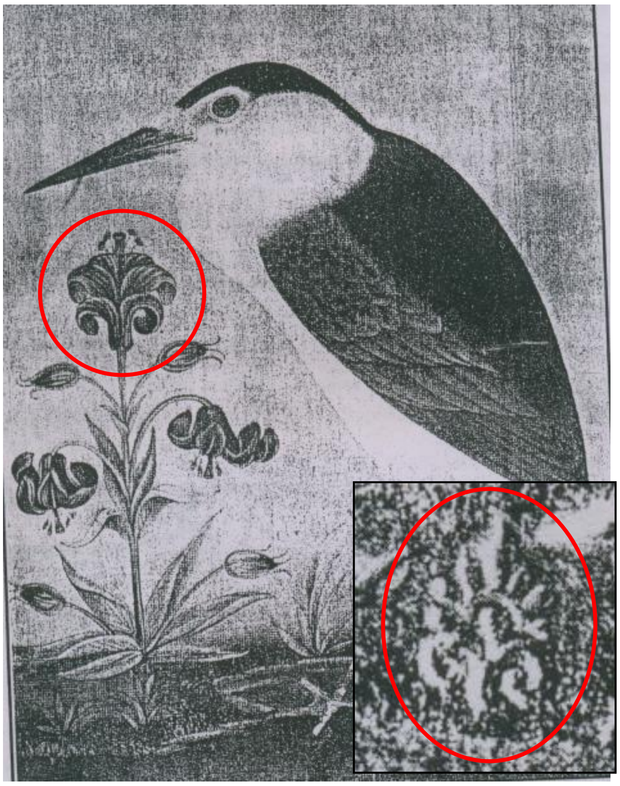


fig. 3 A painting from the album of Prince Dārā Shikoh showing flower resembling with the floral mark found on the coins of Aurangzeb (source: Indian Paintings Under the Mughals, 1924)



fig. 4 Coin of Kām Bakhsh (source: Supplementary Catalogue of the State Museum, Lucknow, 1965)

mark traced on the coins of Aurangzeb. This painting contradicts with the arguments given by Sethi.

Secondly, only on one coin, seven petals are shown and on the other coins, there are five petals. It means the coins were struck by more than one die. The coins of this series were continued to struck for several years therefore find of such a distinct floral mark may not be considered as one man's fondness or accidental striking. Difference in the depiction of petals on coins also suggests that this was simply a flower design. If it was a typical crown of lord Vithobā, then the change in number of petals on crown might not be shown.

Thirdly, a coin of Kām Bakhsh struck at Ahsanābād in AH 1119 has also been published by C.R. Singhal in the *Supplementary Catalogue of the Coins of Mughal Emperors in the State Museum, Lucknow* (Singhal 1965: 121) (fig. 4). This coin also bears a similar motif with five petals, three upward and two curling downward. Ironically, it is left un-noticed by C.R. Singhal.

On the coins of Mughal empire, Gulbargā was known as Ahsanābād which is in Deccan region. Hence, continuation of similar mint mark in later period in the region shows that the motif was never restricted by royal authority as it was simply a mint mark.

It clarifies that the motif shown on the coin series in discussion, is not a Vithobā figure, but it is compulsorily a flower which depicts a particular mint mark of the mint Master.

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Chinese Porcelain Finds from Purana Qila Excavation

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Chinese porcelain is a fine ceramic which is refined, non-porous and glossy in composition. This distinct pottery was originated in China under the rule of T'ang dynasty somewhere in-between late 8th and early 9th century CE. The T'ang periods' porcelain had a pure white surface which was developed from white stoneware of earlier periods (Medley 1976: 97). In quality, porcelain was smooth to touch but hard as jade and gave a melodious tone when strike. It was prepared using two main ingredients i.e. *kaolin* or *gaolin* (white china clay) and *pai-tun-tzŭ* or *petuntse* (decayed granite), resources of which were abundantly available in China (Savage 1954: 3). These two main constituents produced porcelain when combined together and fired at a high temperature of 1280°-1400° C.

Different varieties of Chinese porcelain were developed over a long span of time which now forms an important part of the history of China. Some of the popular varieties of porcelain were - white porcelain; celadon ware in colours like green, blue and brown; blue-and-white porcelain, red-and-white porcelain, etc.

The term 'porcelain'

The name 'porcelain' was first referred by Marco Polo as 'porcellana'. His record has stated that he used this word for describing two different things. In first instance, Marco Polo used the word 'porcellana' for *cowrie* shells which were used like small currency in India, China and Southeast Asia (Wright 1886: 263). The second mention was found when Marco Polo mentioned about bowls and dishes of porcelain which were manufactured in the city of Tin-gui located near the port of Zai-tun (Quanzhou) (Wright 1886: 344-345).

The first recorded use of the term 'porcelain' in Europe is noticed in maritime code of Barcelona (1250 CE), where the Spanish word '*porcelanas'* refers to *cowrie* shells (cypraea moneta) (Carswell 2000: 18).

According to the Oxford dictionary, porcelain is a white hard shiny substance made by baking clay and used for making delicate cups, plates and decorative objects. The full definition states it as a glazed pottery where the translucent glaze has become a part of the clay body and formed a hard surface which cannot be scratched with a knife. The other noteworthy quality of porcelain is its resonance, in other words, it should give out a musical note when lightly struck (Silcock 1939: 13).

Porcelain in India

Porcelain was extremely popular among royals and rich merchants. It was an expensive product. Being a must-have item in the royal kitchens, the demand of porcelain was fairly high. It was an important trade item which was exported from China in bulks to various parts of the world including South Asia, Southeast Asia, Central Asia, etc. In Indian context, the trade of porcelain started in about 10th century CE which continued till 18th-19th century CE. Porcelain was counted one of the most exotic goods traded to India from China in large quantities. Its trade was carried out both via the Silk Road (land route) and the Spice Route (sea route).

Different varieties of Chinese porcelain have been reported from over a hundred archaeological sites of India. Some of the worth-mentioning sites are Khalkattapatna and Manikapatna in Orissa; Kotapattanam in Andhra Pradesh; Gangaikondacholapuram and Periyapattanam in Tamil Nadu; Arikamedu in Pondicherry; Palaiya-Kayal, Kodungallur and Kottapuram in Kerala; Chaul in Maharashtra, Ambari in Assam; Sekta and Andro in Manipur; Firozshah Kotla and Purana Qila in Delhi; Fatehpur Sikri in Uttar Pradesh; Champaner in Gujarat; St. Augustine Church in Goa. Most of these sites have reported porcelain of Ming period (1368-1644 CE) in huge quantities. Amongst these important archaeological sites, Purana Qila is a noteworthy site where porcelain pieces of late 15th to 17th century CE were reported.

Purana Qila Excavation: A Brief Review

The excavation at Purana Qila was commenced in 1969 by the Archaeological Survey of India under the direction of B.B. Lal, B.K. Thapar and M.C. Joshi which continued for three seasons (*IAR* 1969-70: 4-5; *IAR* 1970-71: 8-11; *IAR* 1971-72: 7). The area chosen for excavation was located around 50 meters south of the Sher Mandal (Humayun's library) (fig. 2).

The earliest occurrence from the site revealed evidence of Mauryan period (3rd century BCE). Though, some stray finds of Painted Grey Ware (PGW) were also noticed in the Mauryan period level which suggested





fig. 2 Excavation site, Purana Qila (far above); fig. 3 Terracotta figurines (above on the left) and a Gupta coin (above right) (source: Expedition - The Magazine of Archaeology, 1972)

that there must be a settlement of PGW period somewhere nearby (Thapar 1972: 22). Important structural remains found in the Mauryan period were house walls made of mud bricks; drains of rectangular and wedge shaped bricks; terracotta ring wells, etc. Evidence of wooden posts was also traced. The other occupational level found were Sunga, Kushana, Gupta, Post-Gupta, Rajput, Delhi Sultanate and Early Mughal periods. Structural remains of all these periods include houses, staircases, fortifications, etc.

Some of the significant artefacts discovered during the excavation were terracotta figurines, coins, copper bells, semi-precious stones, etc. (fig. 3). The pottery assemblage from the site included Painted Grey Ware (PGW); Northern Black Polished Ware (NBPW); Kushana periods' stamped ware; Gupta periods' moulded pottery; Rajput periods' vases, dishes, bowls and lids; Glazed ware; Timurid ware; and Chinese porcelain.

Porcelain from the Site of Purana Qila

The finds of porcelain reported from Purana Qila are quite significant. Some of the pieces discovered are inscribed with Chinese characters suggesting dates of Ming period. The pieces are highly fragmented and bear evidence of riveting marks. The collection includes five dishes and three bowls. At present, this collection of porcelain is displayed in the Archaeological Museum, Purana Qila, Delhi. Detail of the porcelain pieces are as follows -




1 (Inside) This broken blue-and-white dish of 16th century CE has a flattened foliated rim decorated with scrolls of leaves and floral pattern. Cavetto of the dish is left plain followed by the central design of four deer (in different postures) in the landscape under the moon and clouds.

1 (Outside) This side is decorated with a floral scroll pattern. On the base, there is a post-fired drilled inscription which looks like a small rounded “w”. (shown above in red circle)




2 (Inside) This badly fragmented blue-and-white porcelain bowl of 16th century CE has a straight rim decorated with a leaf scroll design. Cavetto is left plain. Centre of the bowl is painted with a scene of landscape having tree and mountains.

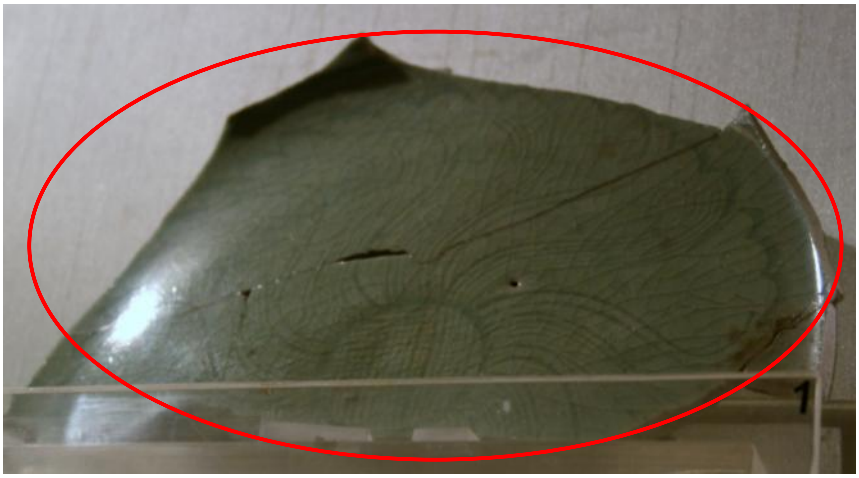
2 (Outside) This side of the bowl is also decorated with mountains, trees, flying birds, etc. On the base, there is a post-fired drilled inscription which looks like a small rounded “w”.





3 (Inside) This circular footed bowl of late 15th century CE has a straight rim which is painted with a decoration of a Chinese pagoda standing above the mountains. Cavetto of the bowl bears no decoration. Its centre has a Chinese inscription of six characters which reads as “*da ming chenghua nian zhu*” i.e. ‘made in the Chenghua period of the great Ming dynasty’.

3 (Outside) The rim has a decoration of classic scroll. Beneath it, there is a big unidentified flower along with tiny five petalled flowers. The inscription “*da ming chenghua nian zhu*” is also found on the base. Rivet marks are visible.





4 (Inside) This is a 16th-17th century CE broken dish of celadon ware variety. Its rim portion is missing. The central design shows an incised fully-blown chrysanthemum (*Chü*) flower which is partially broken. Chrysanthemum depicts the month of November in Chinese art. (a red chrysanthemum flower shown on the right)

Pictures of the outer side could not be taken as this dish is highly fragile.



5 (Outside) This badly fragmented part of a bowl has a outward flaring rim decorated with two blue coloured horizontal lines. It has a painted scene from a Chinese verse along with an inscription in Chinese. The inscription on the potsherd is the last paragraph of a Song period's poem "Former Ode on the Red-cliff" written by Su Shi Song which talks about the dream of a man who is returning back to his home along with two guests after the end of the war on the red-cliff" (as shown in the painted scene marked with red circle).

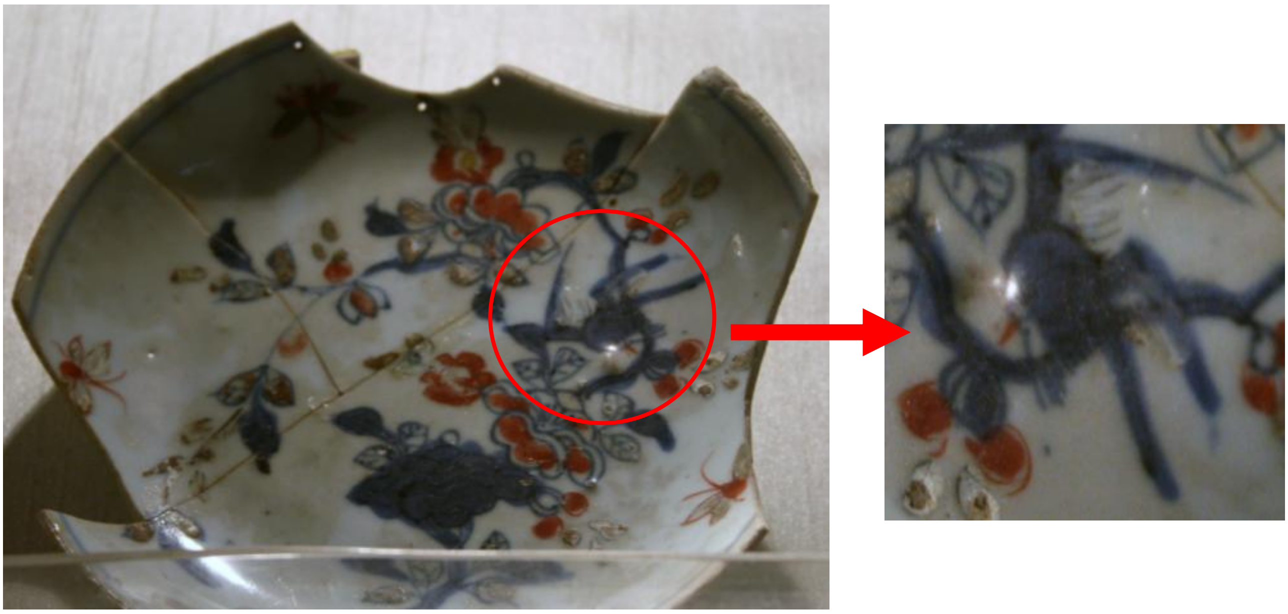
Pictures of the inner side could not be taken as this bowl is highly fragile.





6 (Inside) This blue-and-white porcelain dish of 16th-17th century CE has a flattened rim, decorated with peach (*hai t'ang*) (marked above in red circles above) and floral designs. The centre part has a landscape design with two prancing deer.

Pictures of the outer side could not be taken as this dish is highly fragile.



7 (Inside) This 16th-17th century CE fragmented dish of over-glaze blue-and-red porcelain has a straight rim. It has a decoration of a bird with red beak sitting on the shrub (as marked with red circle) of red flowers surrounded by three butterflies outlined with red colour. The dish also has three drilled holes which suggest that it must be riveted for re-use.

Pictures of the outer side could not be taken as this dish is highly fragile.



8 (Inside) This 16th-17th century CE fragmented dish has a flattened rim, decorated with horizontal elongated rectangular boxes filled with blue colour. Cavetto is decorated with stylised leaf designs having some geometrical patterns. Centre is painted with a seated peacock. A chrysanthemum flowers is painted on the left side of the peacock.

Pictures of the outer side could not be taken as this dish is highly fragile.

Purana Qila is just one example where Chinese porcelain has been found. Similarly huge quantities of porcelain have been evidenced from over a hundred archaeological sites located in 20 states of India.

Porcelain is an important evidence to trace the trade connections between India and China. But due to lack of proper information, it has been incorrectly assumed as Mughal ware or glazed ware. Being assumed as a Mughal pottery, the porcelain collections has been ignored and neglected.

Acknowledgement

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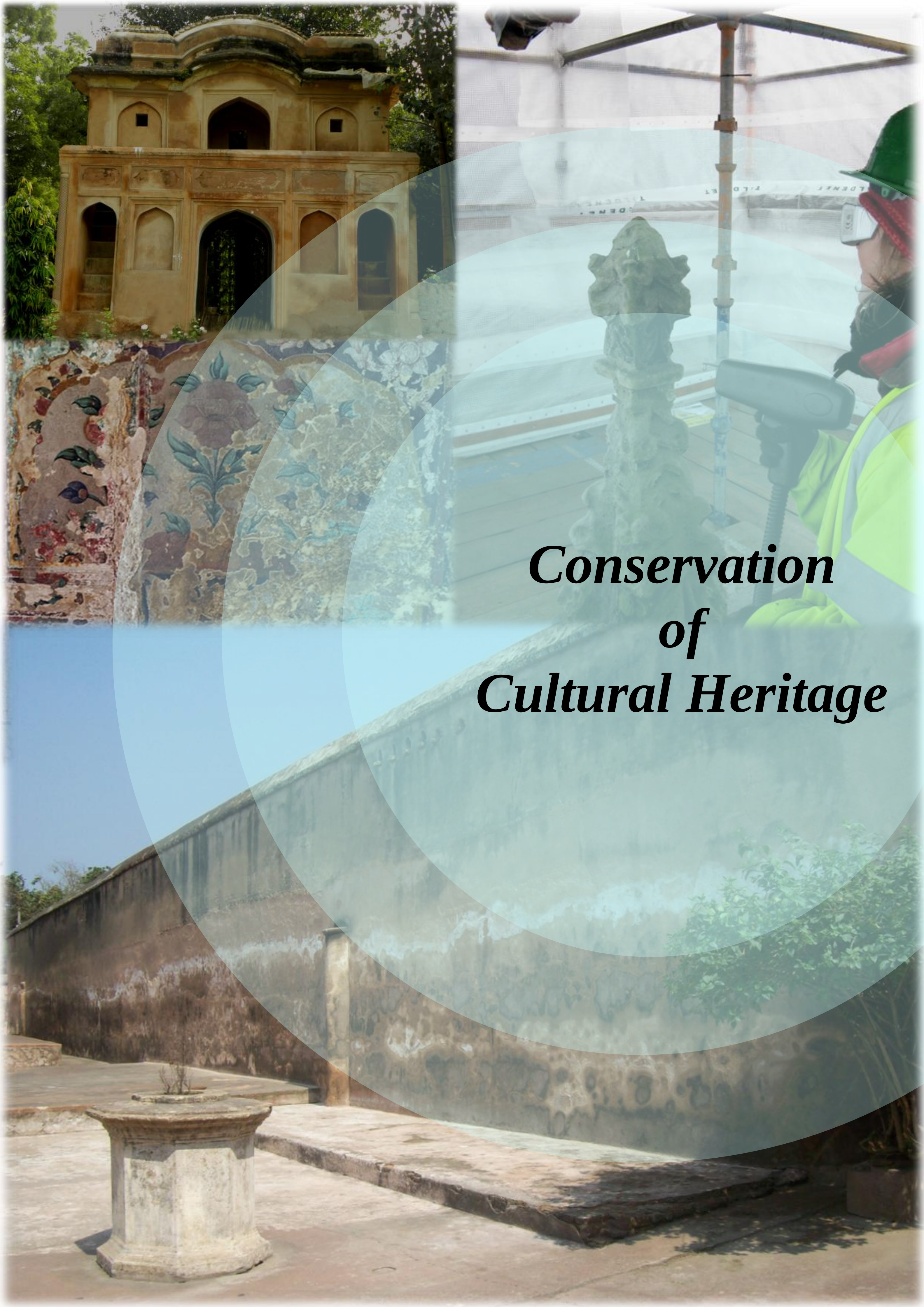
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Conservation of Cultural Heritage



Dampness - A Common Conservation Problem of Historic Buildings

* *Tapan Bhattacharya*

Introduction

Dampness or excess moisture is a very common conservation problem, which seriously affects the stability of historic buildings. Unfortunately this is often misunderstood and also misdiagnosed. As a result, damp affected historic buildings are inappropriately repaired which instead of eliminating the problem, aggravates them. Without knowing the right cause of damage in a building, hypothetically proposed expensive remedial measures can adversely affect the integrity and stability of the building in the long run. Dampness in old buildings is mostly caused by abandonment, erroneous maintenance and unsympathetic use of the buildings. Such problems should not be dealt without understanding the construction of the building.

Damp Proof Course (DPC) in Modern Buildings

In modern constructions, *Damp Proof Course* or DPC is provided at the plinth level of buildings. It is an impervious barrier that prevents the rising of ground water into the structure through the walls by capillary action. On the other hand, in the historic buildings, no such DPC was provided. The sub-soil water was allowed to enter freely into walls. Builders also were well aware of this problem of rising dampness and of other sources of dampness in masonry buildings like penetration of moisture into the walls by driving rains, etc. To deal with these problems, they built the structures using porous building materials like lime mortar, bricks, stones, etc. It ensured free movement and dispersal of moisture inside the building by evaporation and thus helped keeping the buildings dry and healthy. The bricks or stones were laid in lime based mortars and also plastered in lime sand mortar with the concept that moisture from rain, etc. will enter into the structures and that moisture will again be released in atmosphere by evaporation through the typical pore structure of

lime based mortar.

Signs of Dampness - A Clear Indication

Stains or any other signs of dampness on surface of old buildings indicate that this process of movement and dispersal of moisture from inside of the building has been disrupted (fig. 1).



fig. 1 Golden Temple, Amritsar: Stains over paintings due to disruption in dispersal of moisture from inside

Some common causes of dampness in old buildings are -

a) Rising moisture by capillary action
b) Defective surface water drainage system
c) Failure of rainwater pipes
d) Poor ventilation
e) Planting trees or shrubs around historic buildings
f) Use of incompatible materials for repairs or moisture barriers

Rising Moisture by Capillary Action

Rising damp or the upward movement of moisture through porous and permeable building materials by capillary action is a common problem found in many buildings. Quite often such problems are wrongly dealt by de-plastering, re-plastering, painting with impermeable paints, etc. on the affected areas without giving due consideration to the exact cause of problem, the original building materials and the building techniques used. Penetration of moisture through vulnerable materials or finishes in historic structures becomes a major problem. The moisture



fig. 2 Gateway, Lodhi Garden: Dampness on the walls due to non-existence of water drainage system

dissolves the soluble salts (calcium and sulphate) and carries it from its source which then surfaces during evaporation. This process leads to formation of salt deposits on open pores of permeable surface. Where there is a large evaporative surface, salt crystals are deposited as a harmless flour-like dusting on the surface. But if the evaporation process is restricted by impermeable material like synthetic paint, then salt crystals start expanding. It results in formation of cracks and fractures in materials and starts falling off. The results are obviously damaging and disastrous.

Defective Surface Water Drainage

In almost every old building, a common source of moisture is defective ground and surface drainage (fig. 2). Indis-

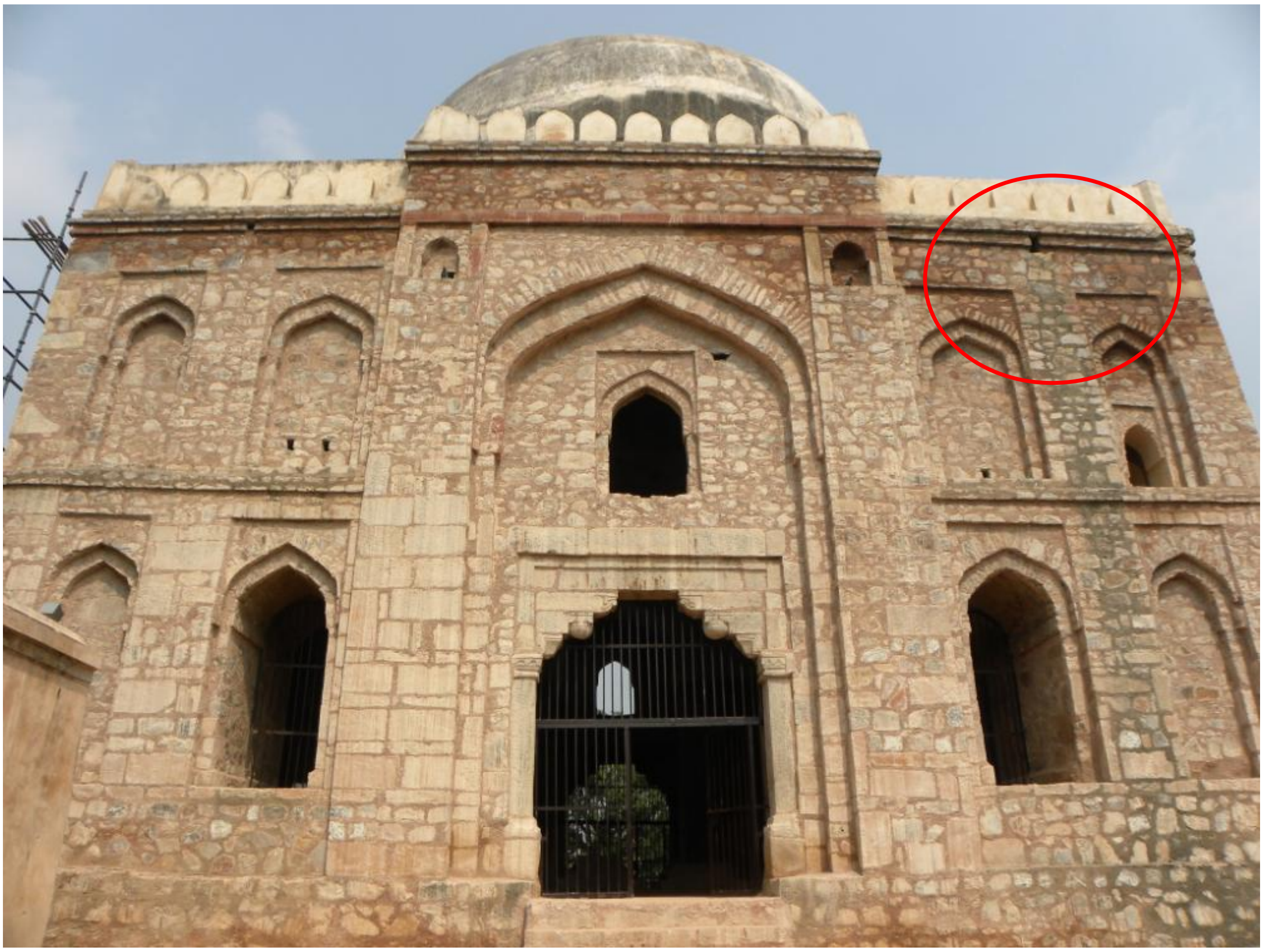


fig. 3 Bijri Khan's Tomb, R.K. Puram: Seepage of water from top of the wall due to blocked *parnālas*

criminate construction, laying concrete path, etc., around historic buildings, without carefully considering the original drainage or slope around the building are sometimes the major responsible factors. A higher external ground level than the floor level of the building can cause penetration of moisture through the walls which are traditionally built using lime mortar. In such cases the external surrounding area is to be lowered than the floor level of the building.

Failure in Rainwater Pipes

Rainwater pipes in historic buildings are provided to drain out accumulated rainwater from the roof to a surface drain without allowing any part of it to penetrate into the structure. Proper functioning of rainwater pipes is vital to keep a building dry. Failure or leakage even from a single joint can cause ingress of large volumes of water into walls which later spreads through the porous masonry structure to a larger area (fig. 3). To prevent such failure of rainwater pipes, historic buildings should invariably be inspected during and after rain, when damp patches on the higher wall surface are visible.

Poor Ventilation

Current practice of air-conditioning the historic buildings has lead to huge dampness problems. The performance of traditional buildings chiefly relies on free and un-restricted air ventilation and

moisture movement pattern within the structure (fig. 4). Closing of windows for the purpose of air-conditioning causes stagnation of humid air inside and invites dampness issues. Such attempts of providing air-conditioning in historic buildings should be carefully chosen after checking the original structure and condition of the structure.



fig. 4 Effect of rainwater pipes failure in a modern structure

At present there’s a huge list of monuments lying abandoned for decades. Most of these monuments are either privately owned or left out of use. Leaving a monument abandoned for a long time and keeping its doors and windows closed for safety leads to dampness because of poor ventilation. Years of negligence and dampness turns the building material to dust. Adaptive reuse of such buildings is the best solution to this problem. Reuse of a heritage building would not only keep it in a good condition but would also help in generating financial aid. The earned revenue can be utilised to keep old buildings in the best possible shape.

Use of Incompatible Materials for Repairs or Maintenance

For re-pointing, re-plastering or re-building the damaged portion of a historic building, traditional building materials should be thoroughly examined and then intervention should be done. Inappropriate use of modern materials like cement can adversely affect the structure by disrupting the moisture movement and dispersal pattern. Use of non-porous building materials such as cement based paints, etc. damages historic buildings. Application of these paints on porous walls of historic buildings prevents breathing and evaporation of moisture inside the masonry which leads to drastic damage. On the other hand, use of breathable materials such as lime mortar helps in accommodating moisture inside old building walls and releasing it by evaporation.

Appropriate measures are required whenever a new dampness problem is noticed in a century old historic building which doesn’t have any significant structural failure. It becomes necessary then to search for an inappropriate repair or maintenance recently done within the building.

Another cause of concern is the use of cement mortar or cement rich lime mortar which sometimes is used for repairing and restoring a historic building to achieve higher strength of masonry. However, traditionally constructed

stone walls or brick walls do not require very strong mortar for strength and durability. Rather a soft and permeable mortar is sufficient.

Water Repellants

Many conservation professionals prefer the application of water repellants on exterior stone or brick wall surfaces to make them waterproof. But historic buildings built with stone or bricks laid in lime based mortar cannot be totally waterproofed by the application of any modern water repellant. Only application of lime mortar which was traditionally used in old structures can absorb water and subsequently allow it to evaporate from the building. There is no need of water repellant if a building is repaired or re-plastered using lime mortar as per the original setting.

Conclusion

For dealing with dampness related issues in historic buildings, the first step would be to identify the source of the problem. Then the source is to be treated and damp portions of the structure should be allowed to dry out thoroughly before carrying out remedial or repair works. Unfortunately, till date, a number of wrongly diagnosed dampness problems and consequent inappropriate repair actions have caused unnecessary expenses and irreparable damages to the historic buildings.

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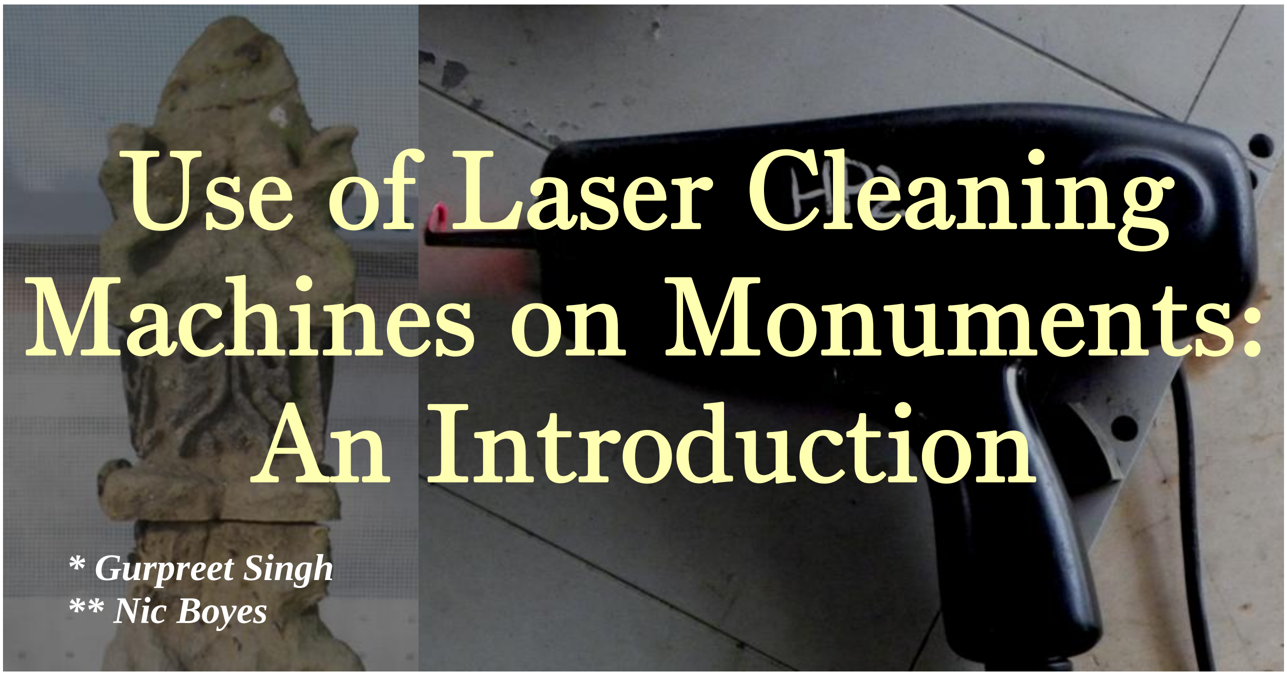
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Use of Laser Cleaning Machines on Monuments: An Introduction

** Gurpreet Singh*
*** Nic Boyes*

Laser cleaning is a valuable addition to the conservator's toolbox as it offers a highly selective, reliable and precise method of removing layers of corrosion, pollution, unwanted paint and other foreign elements without harming the original surface of heritage properties. The use of laser-based techniques during the past few years has increased significantly which has made conservation methods less intrusive and more controllable.

Laser in Technical Term

It is a device that produces a powerful beam of coherent monochromatic light by stimulated emission of photons from excited atoms or molecules. Lasers had been in use for drilling, cutting, alignment and guidance for more than 50 years. Today laser technology is used in different devices like DVD readers, and also in telecommunications, and the like. Its absence can make a huge impact on man's daily life.

Historical Background

The word "laser" is the acronym for Light Amplification by the Stimulated Emission of Radiation, a technique that was later developed in mid-20th century. Prior to this, in 1917, Albert Einstein identified a phenomenon he called "stimulated emission of radiation", a concept which eventually led to the development of the laser. This principle is simply a process by which electromagnetic waves of a certain frequency can induce (or stimulate) an excited atom or molecule to decay from a high to a low energy level, thus emitting more electromagnetic waves.

Use of lasers in art conservation took place in early 1970s by John Asmus. He was invited by geo-physicist Walter Munk to produce high-resolution holographic records from marble sculptures for archival purposes using laser technology in Venice, Italy, before further degradation. Asmus had a previous experience with laser ablation due to past

research on using lasers for space exploration, so he came with the idea of using it to ablate the black crusts from the marble with minimum damage.

The 1980s was still an incipient period although lasers were produced with increasing technological advancements. Their use involved a very high cost when compared to the traditional cleaning practices, and their precise short and long-term effects on the works of art needed further research.

It was only in the 90's, with the development of laser technology, that this slow paced research field met a new interest from European researchers. In this period, stone-based materials were the focus of research and the successful cases gave a new vision of using this technique in other materials, mainly on textiles, glass, metals and paintings.

Due to the increasing interest in laser applications in conservation, an international workshop was organised in 1995 gathering the main researchers of the area. The meeting was so successful that it turned into a bi-annual conference with the name LACONA (Lasers in the Conservation of Artworks). It has been one of the most relevant international meetings in this field of research. Since then the laser technology has been frequently used by the conservators and other professionals.

Laser Technology in Conservation

The fundamental difference between cleaning with laser radiation and conventional methods is that particles of light, or photons, can discriminate



fig. 1 Use of laser cleaning machine for the removal of pollutants (Source: Gurpreet Singh, 2011)

between the soiling and substrate. The technique thus allows a conservator to control the level to which the surface is cleaned.

The laser cleaning technique has been used in conservation field for different issues like removal of synthetic paints, surface cleaning, removal of pollutants, etc. (fig. 1). Traditional cleaning techniques opted by painting or architectural conservators have several issues which can't be easily controlled. Use of chemicals for conservation has several problems like control of their penetration in paint layers, neutralising their toxic nature, etc. On the other hand, the mechanical cleaning technique carries the risk of harming the surface of original fabric. This new technique of using laser treatment has always acquired much attention compared to other



fig. 2 Cleaned sandstone surface by using laser cleaning machine (as marked in red circle) (Source: Gurpreet Singh, 2011)

mechanical and chemical techniques. The reason behind the fame of laser technology is its minimal contact with historic fabric. It is an important tool for conservators which help in controlled removal of selected surface layers.

To name a few, Rosslyn Chapel (Rosslyn, Scotland) is one of the examples of monuments where the laser cleaning method was chosen for removing different kinds of impurities over sandstone surface. Laser cleaning (fig. 2) has brought back the monument in its original colour and appearance as the dark patches, pollutants and soil deposits have been removed from both interior and exterior of the building. The benefits of non-contact and selectivity can be easily seen in the chapel. The cleaning of affected sandstone surfaces and architectural details using laser technology has achieved the target of-bringing the monument back into its most original form.

Benefits of Laser Cleaning

Selectivity - Recommended cleaning can be carried out within suitable parameters and it will be possible to remove layers of dirt without removing original material from the surface of the object. The technique is sensitive enough to preserve the surface relief. Original tool markings can be uncovered leaving the delicate patinas intact.

Non-contact - Since energy is delivered in the form of light, there is no mechanical contact with the surface. This allows extremely fragile and friable surfaces to be worked on.

Localised Action - The laser cleans only where directed. A single laser can supply a beam with a diameter variable between a fraction of a millimetre and one centimetre, allowing the same tool to be used for both extremely precise and relatively large-scale work.

Immediate Control and Feedback - The cleaning action is instantly halted once the laser is switched off enabling the conservator to stop the process whenever he or she wants. The condition of the surface can be continuously monitored by the conservator during cleaning, allowing decisions to be made at the earliest possible stage.

Environmental - Laser cleaning generates very small quantities of waste (of the order 100 g/m2 for a uniform black

soiling approximately 0.1 mm thick on outdoor limestone). The only waste generated is the dirt ejected from the surface which is straightforward to collect and dispose of using efficient extraction systems. There is no use of hazardous chemicals or solvents and the only protective clothing necessary is safety spectacles, and the work concentrated area covered with thick black plastic sheets. Laser cleaning is a clean and simple technique that causes minimum disruption.

Reliability - Laser radiation at 1.06 µm has successfully been used to remove dirt and other coatings from a wide range of materials including marble, limestone, sandstone, terracotta, alabaster, plaster, aluminium, bone, ivory and vellum. In some cases, the availability of radiation at other wavelengths can increase the flexibility of the tool, for example in case of removal of some types of organic growth. As lasers have very few moving parts, they are also extremely reliable. Only protective clothing necessary is safety spectacles, and the work concentrated area covered with thick black plastic sheets. Laser cleaning is a clean and simple technique that causes minimum disruption.

Use of Laser Technique on Monuments of India

India has a large number of monuments seeking immediate attentions in terms of conservation. In old times, a variety of stones and other materials such as marble, sandstone, limestone, khondolite, quartzite, granite, *lakhauri* bricks, etc. have been used for the constructions of massive buildings in different parts of India. It may be noticed that the materials chosen for construction in ancient buildings were selected on the basis of its availability and the craftsmanship in that particular locality.

Every stone and building material has its own properties and behaviour which would change with time. Irrespective of what kind of stone and other materials used on monuments, one can find a common problem in all the old structures i.e. deterioration due to change in environment. Some other universal problems causing deterioration of monuments are pollution and fluctuation in temperature and humidity. It may be pertinent to mention that a monument is like a living being which breathes. Problems of unwanted deposition on the surface of monuments can damage it from inside. The alien depositions cover the outer layers of old structures and don't allow it to breath. However, these depositions of soil and pollution marks can easily be removed by usage of laser cleaning technology. Apart from the pollutants, the laser technology can also be used for the removal of newly added synthetic based paint layers, and also the graffiti marks, which is another common problem of the monuments of India.

Some of the popular monuments of India such as Humayun's Tomb in Delhi; Sun Temple in Konark; Lingraj Temple in Bhubaneshwar; Taj Mahal in Agra, etc. are facing a number of deterioration problems including deposition of pollutants. Apart from these monuments, there is a long list of both well-known and lesser-known monuments of India where immediate actions are required

for removing marks left as a result of pollution.

The laser technology has not been used on any heritage building of India till now. But considering the success of its usage in Europe, the concerned authority in India can at least start thinking and discussing over it. Opting and utilising an already tried and tested laser cleaning technique would surely give required results. Even in Europe, the laser technology was first used for conservation of artefacts in museums. But its success gave a much needed push to beginning of its use on monuments. The technique gave required results in comparatively lesser time and fulfilled most conservation ethics and philosophies.

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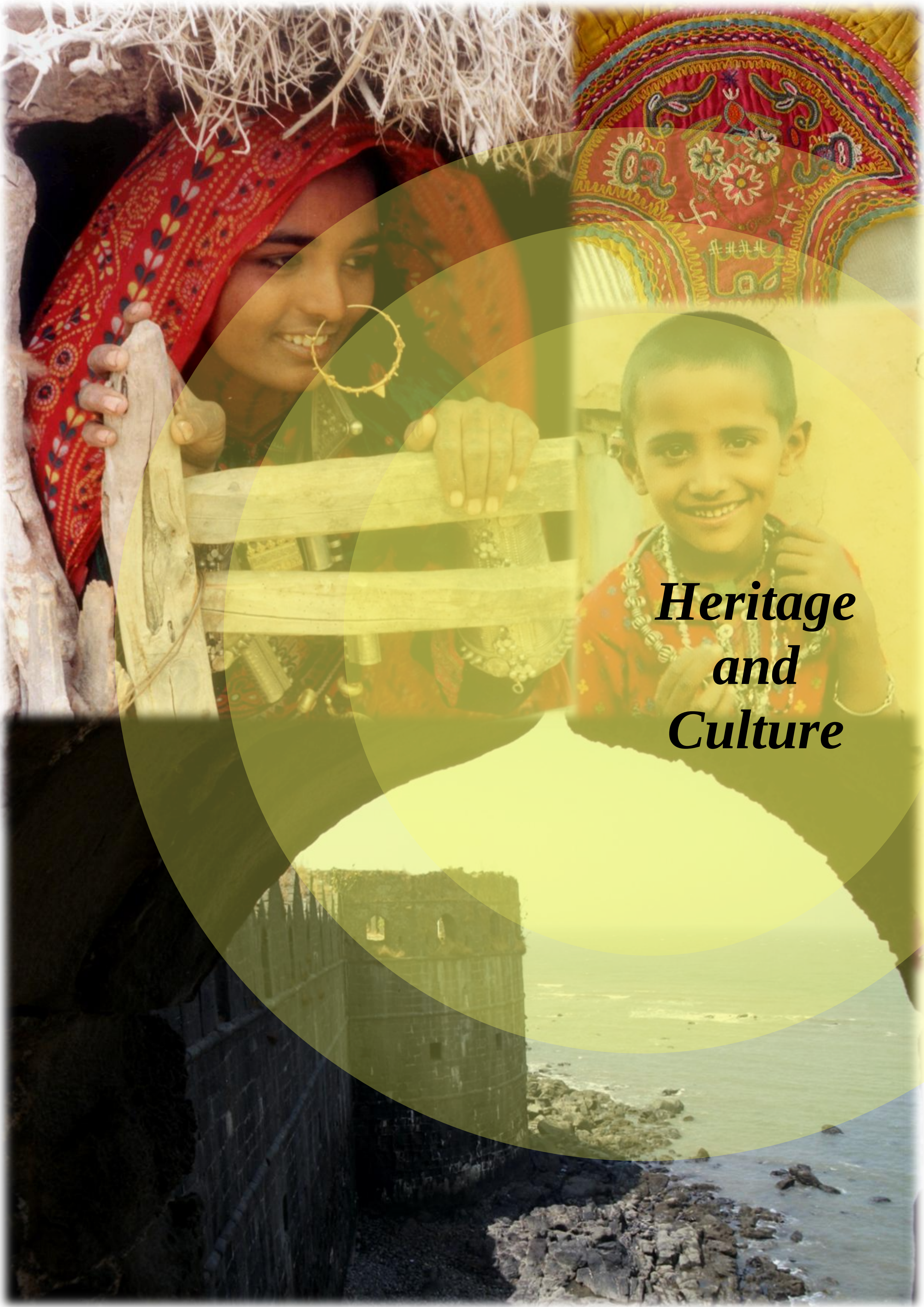
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Heritage and Culture





Kachchh a Heaven's Delight

* Nayan Chakraborty
** Sangeeta Chakraborty
*** Ravinder Kumar

Location

Kachchh, located in the northwestern part of Gujarat is an extension of the Thar Desert. Resembling the shape of a tortoise or 'Kachchua' or 'Kechho', it has been named so. This central highland plateau divides the land from the Kathiawar region and separates the Sind-Baluchistan province of Pakistan by the Great Rann of Kachchh. The border with Pakistan lies along the northern edge of the Rann where a small portion known as the Kori Creek acts as a part of maritime boundary dispute. It is bounded by the Arabian Sea in the west, the Gulf of Kachchh in south and southeast and Rann of Kachchh in north and northeast.

Covering an area of 45,612 sq km, this is the largest district of Gujarat and has 966 villages ranking it the second largest in India after Leh. Bhuj is the administrative headquarters; other main towns are Gandhidham, Rapar, Anjar, Mandvi, Madhapar and Mundra. The place with eighteen varied tribes, distinct language, culture and custom is a paradise for cultural tourists worldwide.

Approach and Accommodation

There are a few options to get into Kachchh by rail, road, and air. Kachchh Express is available from Mumbai on the Mumbai-Ahmedabad route and Ala Hazrat Express from Delhi. By road one may reach to Kachchh from Ahmedabad via Mehsana. Regular private and Government buses are also available from all the major cities of Gujarat. To enjoy the grand spectacles of territories wild and primordial, journey by road would be a better option for the visitors. From Mumbai, regular flights of Jet Airways, Indian Airlines, and Spice Jet are available for Bhuj.

For accommodation, private guest houses and hotels are available at Bhuj, Rapar and other towns of Gujarat. Tourism hotel in the village Dholavira is

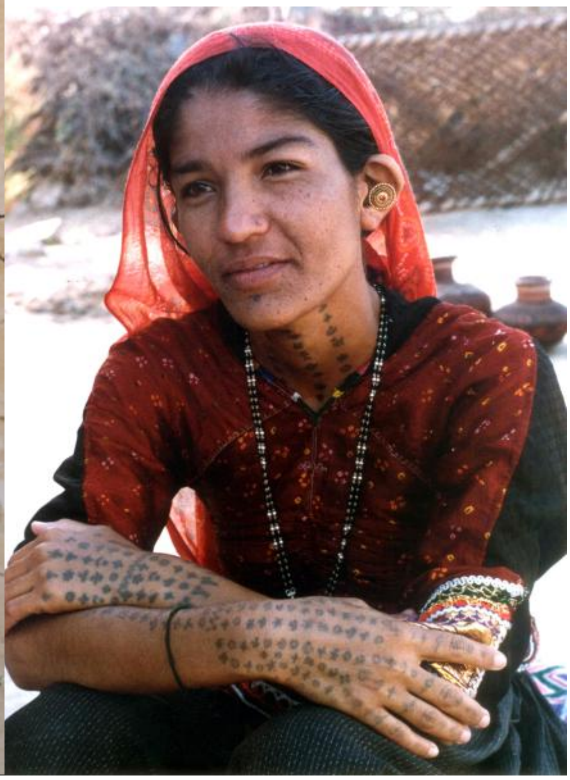
also available. Climate is extreme with an average temperature of 44-46 degree C and a minimum 7 degree C, although it varies to a certain extent. Hence, it is advisable to visit Kachchh between November and March.

Tribes of Kachchh

The people of Kachchh comprise of nomadic, semi-nomadic and artisan tribes who contribute to the rich folk. Prominent groups and communities include Khatriis, Rabaris, Rajgor, Shah, Bhanushali, Jains, Kachchh Gujar, Kshatriyas-Mistris, Kharva Meghwals, Wankars, Vankaras and Ahirs. Some of them have migrated from western Rajasthan, Sindh, Afghanistan and further. The languages spoken predominantly is Kachchhi and to lesser extent Sindhi and Gujarati. Sometimes one can recognise the caste of people from their typical dress, especially the Kachchhis.

This land is thus full of surprise, and innate splendour which intrigues for most of the travellers. The mood and rhythm of the countryside varies from village to village with different kinds of tribes like Rabari, Aahir and Charan all bonded together into one land. Sea, desert, farming, dress and cattle raising are the true reflection of the Kachchh's culture.

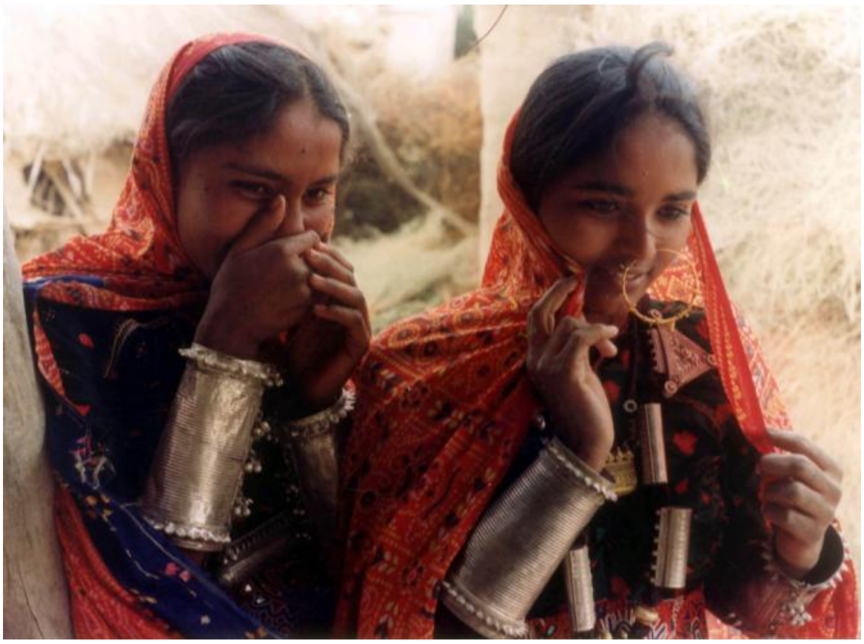




Children of Kachchh in their traditional attire (left); A woman of Kachchh wearing tattoos (right)
(source: Ravinder Kumar, 2009)

Dresses and Ornaments

Villagers' common dress is Cheni, a kind of thick old style dhoti, having a black, yellow and red border called 'Khes' together with 'Abho', a kind of chaddar on the shoulder. Sometimes in




Kachchhi women adorned with traditional ornaments including a heavy nose-ring *akota*
(source: Ravinder Kumar, 2009)

place of cheni, simple dhoti made out of thick cloths and a cap, called 'paagh' on the head are preferred. Ajrakh is another favourite dress of the Kachchhis. Man without 'paagh' is considered as shameful.

Female dresses of the Jat, Rabari, Aahir and Cahran commonly called as 'Comdi', 'Matama' and 'Dhibdo' are unique in their designs and appearances. 'Dhibdo' is a blouse fully open from backside.

There is a variety of ornaments which accompany these dresses like Vadlo, Ghunla, Akota and Kadku. Vadlo is a kind of necklace worn around the neck and Ghunla is a type of ankle bangle. Akota is a typical round ornament generally worn by the women in their nose. It is too heavy; hence support is given by a loop of hair or string. Kadku, an ear ornament is mostly worn by the males.

Art and Craft

Kachchh has a strong tradition of exquisite craft industries like embroideries, appliqué work, bandhani and ajarakh painting, lacquer work, and mud work which reflects their culture in its true sense. The most famous craft of the region is its diverse embroideries. The finest *aari* embroidery was carried out for the royal and wealthy families. Traditionally, women in rural areas do the embroidery which is often given in marriages as a gift. As a matter of fact, some of the finest embroideries in the world are still being produced in the regions like Jadeja, Ahir, Pakko, Neran, Kambira, etc. The ever popular bandhani (tie and die) fabric is carried out on shawls. Even women wear saris of bandhani art on festive occasions like marriages and festivals like Navaratri and Diwali.

Ajarakh printing is a very complex hand printing technique done by using



View of Little Rann (source: Ravinder Kumar, 2010)

wooden blocks and natural dyes that is practiced even today in Dhamadka and Ajarakhpur villages of Kachchh. Such kind of printing is done by a lengthy process which can take up to a couple of months.

Lacquer work is a simple yet high technique hand operated method used for shaping and decorating wood. This is carried out by the Vadha community.

Mud work is another form of art work of this region. Artistic wall pieces made of mud and mirror are used to decorate houses. Handmade, copper plated cow bells which are artistically calibrated are also made in the villages of Zura, Nirona and Bhuj.

Kachchh also has many leather artisans who make products like shoes, sandals, mirrors, small pouches, etc. from leather. The high skilled artisans decorate the articles by doing embroidery or cutting various shaped windows on leather.

Kachchh is also home to a school of handloom weaving. The weavers weave wool, cotton and acrylic yarn to make products like shawls, yardage, jackets, etc.

Some of the important villages that specialise in traditional arts and crafts are Bhujjodi (wool and cotton weaving), Padhar and Dhaneti (Ahir community), Dhamaka (block printing), Lilpur (embroidery) and Anjar (nutcrackers, block printing, and tie and dye).

Little Rann and its Fauna

The Little Rann which comes first in the journey, actually starts from Santalpur and joins Great Rann about 12 km north of Radhanpur. It occupies an area of about 4953 sq km that isolate the salt island on a vast plain in the districts of Surendranagar, Banasakantha, Patan, Kachchh and Rajkot. The salt in the soil makes this low-lying marsh area almost completely barren. During the monsoon it floods the marshland and the whole area is transformed into a vast sea of mud. Migratory birds deem it as an abode during diverse weather conditions, besides being a breeding ground for flamingoes, pelicans and distinctive animals like Blue-Bull, Chinkara or Black-buck, Sambhar,

Chital, Nilgai, Indian gazelle, etc. The smaller animals include hedge-hog, languor, jungle cat, mongoose, hare, civet cat, pangolin, porcupine, gerbil, etc. The carnivorous variety includes panther, wolf, jackal, fox and the jungle and desert fox. The reptile variety includes snakes, tortoises and lizards. Houbara bustard, falcons, cranes and flamingoes of the avian species are also found here.

Little Rann is well-known for Wild Asses. The famous Wild Ass Sanctuary of Kachchh which protects more than 2100 wild asses is named after the endangered Ghudkhur (Equus Hemionus Khur). One has to get permission to enter in the sanctuary at the Superintendent's office in Dhangadhara. In the sanctuary itself, one may shop for Patola silk sarees, Bandhanis, Ghagracholis, marriage costumes, traditional wall-hangings, embroidered quilts, cradle cloths, embroidered footwear, lacquer furniture and other popular items of art.

Greater Rann and its Fauna

The Greater Rann, larger than the Little one, is an expanse of hard and dried salt encrusted barren tract covering an area of 7505 sq km. During monsoon, it is flooded with the waters of the ephemeral streams and high tides that give it a semi-sea like look. In extreme summer, heat mirages abound making distant objects hover strangely above the land.

Like the Little Rann, it is also an abode for a wide variety of flora and fauna. Here the sanctuary includes forest area, wasteland and territorial area of the Arabian Sea. The bird population includes spoonbill, stork, crow, sparrow, osprey and vultures to name a few. The most prominently seen animals include nilgai, chinkara, wild boar, porcupines, fox, wolf, jackal and wild ass, beside reptiles like snakes and wild lizards. Viewing wildlife here is undoubtedly a thrilling experience. As the sun rises and sets, it exhibits a convergence of the sun's hues thereby making it a spectacular scene to see. The beauty of the wild life can also be made by safari, as



View of Greater Rann (source: Ravinder Kumar, 2010)

the anecdotes and explanations during the trip are delighted with the radiance of the wild.

Archaeological Sites

Rann, the jewel in the crown of Kachchh, an unusual saline marsh-land, covering approximately over 12,485 thousand sq km, is divided by the rocky highland into the Little Rann in the east and the Greater Rann in the north. This salt encrusted depressed wasteland has been formed by the repeated aggression and recession of sea since the Jurassic period (six crore years before present),



Dholavira, Gujarat: View of excavated site (source: Ravinder Kumar, 2010)

when dinosaurs wandered the earth. The rapid siltation of Rann took place probably due to the Indus river delta and other rivers draining to the Gulf of Kachchh. The evidence of marine transgression is still visible on the sea cliff of the Rann, in the form of marine fossils like gastropods and wood fossils such as (Deodar tree) of the same geological epoch. The Rann is watered by the high tides, seasonal rivers and infrequent precipitation. Most of the time it looks like a snow white-hard-flat-surface of salt, the monotony of which is broken by a group of islands called Bets. Prominent among them are Pachham, Khadir, and Bela, all located in the north and east-west running hills. These highlands or bets have scrub flora and grasslands, offering refuge not only to the wildlife and numerous tribal groups, but also to the Harappans who made a couple of settlements some 5000 thousand years back.

It is really wonderful to note that the Khadir and Pachham bets were not devoid of human occupation in the ancient time, and the excavation of a few Harappan settlements like Surkotada, Dholavira, Junikuran and Khanmer bear testimony to the fact. In this race, Surkotada, located some 160 km north east of Bhuj in Kachchh, ranks the earliest one which besides revealing typical Harappan elements disclosed the existence of horse first time in this civilisation.

Dholavira or Kotada, another famous Harappan site is located in the Khadir bet of Kachchh. Approximately 100 km north of Rapar, Dholavira is one of the largest and unique Harappan establishments in Gujarat, surrounded by the Great Rann of Kachchh. It is well-known for its wonderful town-planning, vastness of the area and three fold settlements like Acropolis, a Middle town and a Lower town. The former two



Dholavira, Gujarat: View of excavated site (left); Harappan seals (source: Ravinder Kumar, 2009)

units had been further furnished with their own accessories, defense walls, gateways, streets, large open area, elaborate drainage system, two stadiums, symbolic burials beside rock-cut reservoirs in three directions and an inscription of ten large sized Harappan script, ever found in any Harappan settlement in the sub continent.

Junikuran, the other site, lies in the north-eastern corner of Pachham bet (island) almost 250 km from Rapar on the Bhuj Bachau route. It resembles that of Dholavira in chronology and settlement pattern.

Kanmer, located close to the Little Rann in Rapar Taluk of Kachchh excavated very recently has revealed a fortified Harappan settlement strengthened by rectangular bastions on all four corners. Location of such huge Indus settlements poses an enigma to the visitors, as the situation might not have been much different in the past. With the discovery of Indus Valley civilisation, Kachchh's heritage has been boasted magnificently like its landscape.

Other Attractions

High on hospitality and culture, the people of Kachchh are always welcoming. Ancient temples, attractive cultural palaces and forts are the trademark of Kachchh. From the rugged forts to the well carved palaces, sea coast to the desert, from the royal lifestyle to tribal villages, everything seems to be just perfect. The district due to its varied culture has certain places of historical importance which would interest tourists.

The picturesque town of Bhuj which is the central town of Kachchh, represents exciting amalgams of the orient and the occident especially in terms of architecture. Resembling an amphitheatre of hills, the city is dominated by the Bhuja hills surmounted by the fortifications at the hill top. Here the Aaina Mahal (Palace of mirrors), Devi temple on the Black hills, Vijay Vilas Palace of late

20th century deserve mention. Other places of historical relevance of Kachchh are the Ten tombs of Gosh Mohammad, the Sikh Gurudwara and Lakhpat, a fortified town with high walls, having several gates and bastions at the junction of Kori creek and the Rann. Narayan Sarovar temple, the lake of Narayan in Kachchh with five holy ponds, Bhadrashwar Jain temple near the village Jalvana at Koday, temples of Koteshwar - a holy place of pilgrimage, and several temple ruins at Jakhs, Bhuvad, and Ged, besides ports like Kandla, Mandavi, Mundra and Jakhau are some major attractions.

There are many forts in Kachchh, some are in ruins and some are still in good condition. Kanthkot is one such old fort on the top of a rocky island, Raha fort, 50 km from Bhuj, and Tara fort on the banks of three lakes are noteworthy, datable around 16th century CE.

Festivities

Among the festivals, the Kachchh Mahotsav is the most celebrated one that is held prior to Shivratri. The air is charged with festivity as Bhuj reverberates with a confluence of colours. It is a vibrant festival, where colourfully attired dancers, music concerts and traditional performances can be enjoyed with much gusto. The artistic creativity of the people residing in the area called Bhuga can be seen at every corner with the vegetable colours used to create wonderful designs on the walls and further decorating them with mirrors and beads. On the last day, a grand fair is organized at Dhang, where local people dressed in colourful, traditional costumes, congregate to pay homage at the shrine of Mekan Deda.

This is Kachchh in its colourful best. The prosperous and vibrant culture mesmerises one and all. Remember no visit to Gujarat is complete without a sojourn to this peninsular district, therefore prepare to make a visit to this tourist destination, the remoteness of which has kept it at par excellence for centuries.

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Janjira Fort
The Invincible Beauty



*** Harish Benjwal**

O faery queen of a flowering clime,
Where life glides by to a delicate measure,
With the glamour and grace of a far-off time

- lines written by poetess Sarojini Naidu dedicated to the Queen of Janjira, Nazli Begum

It was one of the seminars held in Jamia Milia University, New Delhi, when I first heard about the Janjira Fort. The gentleman who was giving his presentation was the producer-director G.S. Chani, the brain behind the popular documentary series aired on Doordarshan 'Forts of India' (*Bharat ke durg*). He gave an interesting, informative visual-based presentation about the art of documentary making, the fine details, technicality behind the shooting of monuments and so on. The program 'Forts of India' (*Bharat ke durg*) showcased some 28 popular forts of India which included Golconda Fort, Datia Fort (Andhra Pradesh); Red Fort, Purana Qila (Delhi); Bidar Fort, Bijapur Fort (Karnataka); Bekal Fort, Palakkad Fort, Kannur Fort (Kerala); Gwalior Fort, Chanderi Fort, Mandu Fort, Orchha Fort (Madhya Pradesh); Janjira Fort, Daulatabad Fort (Maharashtra); Qila Mubarak (Punjab); Mehrangarh Fort, Kumbhalgarh Fort, Ranathambore Fort, Taragarh Fort, Chittorgarh Fort, Jaisalmer Fort, Junagarh Fort (Rajasthan); Gingee Fort (Tamil Nadu); and Agra Fort, Kalinjar Fort, Fatehpur Sikri Fort, Jhansi Fort (Uttar Pradesh).



Producer-director G.S. Chani
(source: timescontent.com)

Amongst these, the visuals of Janjira fort, with the sea waves trying its might on the robust outer wall and bastions of the fort captivated my imagination the most. I was amazed by the existence of such a lesser known but historically important and strategic marine fort of

India. Fortunately, as I had planned a short visit to my brother’s place in Maharashtra, so visiting Janjira fort was on my priority list. Prior to that, I searched information on the internet on Janjira fort and its history. The information I found was equally fascinating and captivating.

Term: Murud-Janjira

Word Janjira was originated from the Arabic word Jazeera, which means an island. Some also called it “Jal-Jeera” meaning fort in the water. The other word Murud was once known in Marathi as Habsan (“Habshi” or Abyssinian).

History

The island of Janjira was a small post of Koli chiefs in around 1500 CE. It was captured by Pir Khan, a general of Nizamshah of Ahmednagar. In 1560 CE, Janjira was conquered by Akbar. During his reign, the wooden fortification around the fort was replaced by granite and sandstone. Later, the fort was strengthened by Malik Ambar, the Abyssinian-origin (now Ethiopia) Sidi regent of Ahmednagar kings. It is reported that the island of Janjira had been identified by the Sidi traders as a suitable base for their trading operations long before it was ruled by them. Sidis expanded and improved the Janjira fort and from then onward they became independent, owing allegiance to Adil shah and the Mughals as dictated by the times.

Between the years 1680 to 1790 CE, the Sidis survived a number of wars against three Maratha rulers i.e. Chattrapati Shivaji, Sambhaji and Shahuji. All attempts of Shivaji to capture Janjira fort got failed due to one or the other reason. When Sambhaji also failed, he built another island fort, known as Kaansa or Padmadurg, just 9 km north of Janjira. Later, the fort of Janjira was taken over by the British. The Janjira state came to an end after 1947 when



Ruins of Janjira Fort (far above); a cannon (above)
(source: Harish Benjwal, 2012)

all the princely states merged with the Indian Union.

Features

Murud-Janjira fort, one of the strongest marine forts of India, is located on a huge oval-shaped rock near the port town of Murud which is about 165 km south of Mumbai. The fort can be

approached by boats from Rajapuri jetty. The main gate of the fort faces Rajapuri on the shore and can be only seen when one is quite close to it. The outer wall flanking the main gate of the fort yields a sculpture depicting a tiger-like beast grasping elephant in its claws. Though its meaning is difficult to interpret but the same sculpture appears on many fort-gates of Maharashtra. The fort has 19 intact rounded bastions. One can find a number of native and European canons resting on these bastions.

The historical records say that in old times Janjira was a full-fledged living fort with over 1000 of courtiers, navel personals, Sidi staff officers, etc. Though now in ruins, the fort had all the necessary facilities which included spacious palaces, officer’s quarters, mosque, water tanks, harems or baths, etc.

Travellogue

I along with my parents visited Janjira fort in March, 2012. For reaching the fort, first we took an auto rickshaw for Rajapuri jetty in Murud. It was noon when we reached at the pick-up point near Rajapuri, where a boat already full of its capacity (travellers) was waiting for us. For a moment we thought to wait for another round of the boat. But, when the person in the boat started yelling to hurry up and board it, we reluctantly boarded the boat. The excitement was high as it was my first experience of travelling in a sail-boat, which was maneuvered by a man and wind. It was the thrill of the dwindling wooden boat and the deep sea, which kept the heart beating at top pace. I gave a quick look on my co-passengers. There was this gentleman, who was wearing shorts, a cap and carrying a SLR camera. He was accompanied by his wife and daughter. Looking at his enthusiasm and genuine passion, I concluded that he must be a professor or researcher who have come to visit this fort. The others people in the boat were locals and school students.




Ruined premises of Janjira Fort (left); Foliated gateways in ruins now (right)
(source: Harish Benjwal, 2012)

The sail-boat is the only medium to reach the fort, which ferry passengers




View of the outer wall (left); battlement wall now covered with vegetation (right)
(source: Harish Benjwal, 2012)

to-and-fro at an interval of 45 minutes. When we de-boarded the boat, the boatman warned us to do a quick-visit of the fort.

Inside the fort premises I found sacks of chemical and buckets lying unattended. All over the fort walls, weeds have cropped out and the wild grass had grown out of proportion due to lack of attention from the concerned authority.

This fort is unique because of its history, its strategic location, materials used and the way it is standing. There is a scope for more deep research in it. The Janjira fort must brought in light. Unlike other forts it is a typical example of “jal durg” (or a Sea Fortress).

The fort has the potential to emerge as an adventure tourist destination. The interesting fact of this fort is that a part of the Hindi movie “Qayamat” was shot at the Janjira fort.

The other point of observation is that the concerned authority must come up with measures to preserve this historical monument as early as possible before it turns into debris.

The Janjira fort must be highlighted and it could only be possible when there will be a collective effort from all of us. History is a story to be narrated, to be listened, to be visualised and to be enjoyed. It needs contribution from all of us as a care-taker, as spectators and as a presenter.

Acknowledgement

I would like to thank Sh. G.S. Chani for enlightening and sharing his rich experience in the field of culture and documentation.

The author has visited Janjira fort in March 2012 and expressed his first-hand experience in the article.



Google imagery of Janjira fort (source: Google Earth, 2012)

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Naidu, Sarojini (2007) The Faery Isle of Janjira in *The Bird of Time - Songs of Life, Death and the Spring*, Kessinger Publishing, Montana (the poem was written in 1912).

Cultural Notice Board (CNB) at Murud

Interaction with Locals

Maharasthra Tourism: http://www.maharashtratourism.gov.in/MTDC/HTML/MaharashtraTourism/TouristDelight/Forts/Forts.aspx?strpage=Murud_JanjiraForts.html

Google: http://maps.google.co.in/maps?hl=en&biw=1366&bih=643&noj=1&um=1&ie=UTF-8&q=janjira+fort,+maharashtra&fb=1&gl=in&hq=janjira+fort,+maharashtra&hnear=janjira+fort,+maharashtra&cid=0,0,12546919069076008700&ei=7x1fT_-PL4_zrQfB_tCABg&sa=X&oi=local_result&ct=image&ved=0CBEQ_BI

About the author

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Harish Benjwal is working as a Senior Museum Officer at National Rail Museum, New Delhi. He is also working for a cultural group "Atishree-the Heritage Community". Prior to this, he has worked in a photo-documentation project at Rajasthan which was jointly undertaken by the Archaeological Survey of India and Indira Gandhi National Centre for Arts.

Humayun's Tomb

Humayun's Tomb was declared a UNESCO world heritage site in 1993. The tomb is situated on Mathura road in Delhi. It is one of the finest examples of Indo-Islamic architecture. The tomb was constructed by the orders of Humayun's wife Haji Begam in the memory of Humayun who died after falling from the steps of Sher Mandal (Humayun's library), Purana Qila.


Tomb of Humayun, made of white marble and red sandstone, standing on a 6.5 m high platform

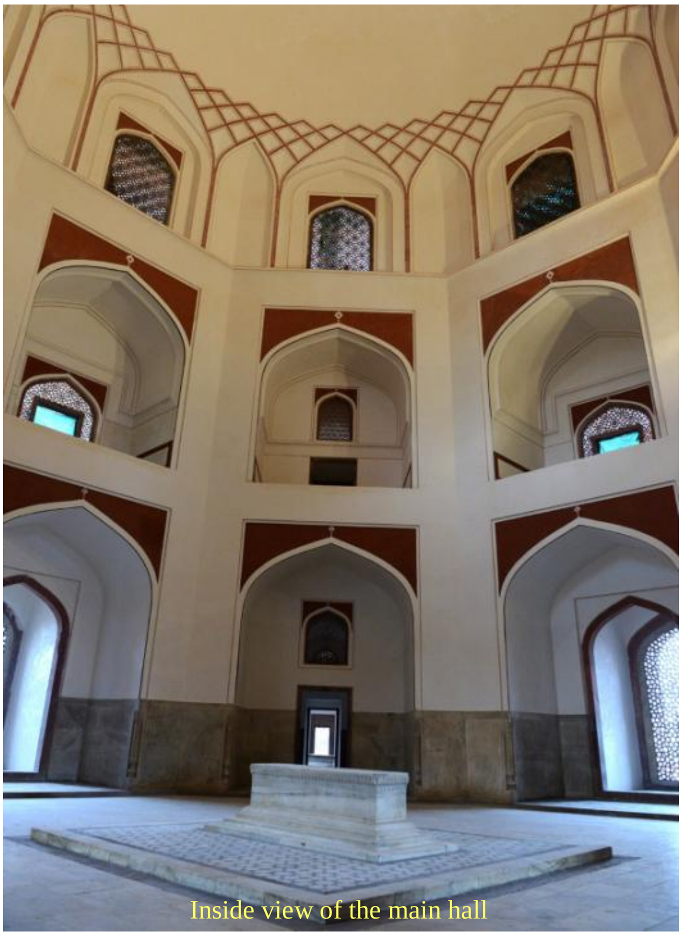

Each side of the Platform has 17 arches, the central one has a staircase that leads up to the tomb



42.5 m high dome covered with marble



Chattris or pillared kiosks around the dome



Inside view of the main hall



Stone carvers making a *jālī* for replacement

Team - Heritage and Us



On the occasion of World Heritage Week (19th-25th November, 2012), *Aadhar*, a charitable trust is organising a Heritage Film Festival, **'*Hastakala*' - Celebrating Hand-Craft Skills of Traditional Artisans and Craftspeople of India** at Ahmedabad. The event is one of a kind as it would highlight and promote India's rich handicraft skills through audio-visual aids. It is a unique endeavour aimed at generating enthusiasm for India's glorious heritage and augments other awareness projects of *Aadhar* relating to traditional arts and crafts in India.

The festival specifically aims to encourage film submissions, organise film-making projects, review film competitions, and screen films to a wide variety of audience. The primary audience in focus for the film festival is the younger generation, mainly school and college students but *Aadhar* also wants to incorporate individuals and organisations related to film, design and heritage. Tourists and international communities are also one of the target audiences so as to promote Indian heritage worldwide


A potter from Gujarat (source: Avni V. Varia, 2012)

The juried films will be screened at various venues in Ahmedabad but all he film entries will be added to the Heritage Film Club Archive, another project by *Aadhar* that would be launched together with the film festival. Both the projects, The Heritage Film Festival (HFF) and The Heritage Film Club (HFC) are complementary and will work in unison. The HFC will collect and compile the resources while HFF will promote the films. In the first year (2012) the films will be screened at various venues in Ahmedabad. Later *Aadhar* wishes to take the festival to other parts of India as well as around the globe. For this, they aspire to forge collaborations with individuals/ organisations to take the screening of films to a wider and more diverse audience.

About *Aadhar*

Aadhar is a charitable trust, established in 2002 with headquarters in Ahmedabad, Gujarat. The mission of *Aadhar* is to develop programs and opportunities that support traditional artisans and craftsmen in an effort to sustain their livelihood, which contributes to the collective cultural heritage.

Ongoing Project

One of the biggest ongoing projects of *Aadhar* is researching traditional pottery from Gujarat. This project aimed to investigate and understand the current scenario of the Pottery craft practiced by the Varia community based mainly from North-Eastern region of Gujarat. The first phase research results, **The Vanishing Pottery of the Varia Potters**, were presented at an international conference, **Pairings: Conversations, Collaborations, Materials** held in 2011.



by Avni V. Varia
Project Director
The Heritage Film Festival

mail.aadhar@gmail.com

Conferences and Workshops

International Conference on Medieval Architecture
Organisers: Archaeological Survey of India
Date(s): 17th-18th November, 2012
Venue: Lucknow
For further information: Lucknow Circle, Archaeological Survey of India
E-mail: circleluc.asi@gmail.com

Workshop on Preventive Preservation of Acrylic Paintings
Organisers: INTACH Art Conservation Centre, Delhi
Date(s): 19th-21th November, 2012
Venue: New Delhi
For further information: Ms. Tanushree Gupta and Ms. Devinder Malhi
E-mail: info.icctcb@gmail.com

XLVI Annual Conference, Indian Archaeological Society
Organisers: Indian Archaeological Society in collaboration with Dept. of Archaeology and Ancient History, M.S. University of Baroda
Date(s): 22nd-24th November, 2012
Venue: Vadodara
For further information: Dept. of Archaeology and Ancient History, M.S. University of Baroda
E-mail: msuarchaeologyconference2012@gmail.com

Indian Art History Congress (21st Session)
Organisers: Indian Art History Congress
Date(s): 23rd-25th November, 2012
Venue: Kolkata
For further information: Indian Art History Congress, Guwahati
E-mail: iahcghy@gmail.com

Introductory Workshop on Medieval Indian Coins
Organisers: Indian Institute of Research in Numismatic Studies
Date(s): 4th-8th December, 2012
Venue: Nasik
For further information: http://www.inhcrf.org/Public/Include/Home.aspx
E-mail: iirns1984@gmail.com

Conferences and Workshops

International Conference on Rock Art
Organisers: Indira Gandhi National Centre for the Arts
Date(s): 6th-13th December, 2012
Venue: New Delhi
For further information: Indira Gandhi National Centre for the Arts, Delhi
E-mail: rockart.ignca@gmail.com

Indian History Congress (73rd Session)
Organisers: Indian History Congress in collaboration with University of Mumbai
Date(s): 28th-30th December, 2012
Venue: Mumbai
For further information: Dept. of History, Delhi University
E-mail: indianhistorycongress.jafri@gmail.com

International Conference on Atisa and Cultural Renaissance
Organisers: Indira Gandhi National Centre for the Arts
Date(s): 16th-18th January, 2013
Venue: New Delhi
For further information: Indira Gandhi National Centre for the Arts, Delhi
E-mail: bachchan_kumar@yahoo.com

Call for Participation

Polychrome Sculpture: Decorative Practice and Artistic Tradition
Organisers: International Council of Museums (ICOM-CC)
Date(s): 28th-29th May, 2013
Venue: Tomar, Portugal
Deadline: 31st December, 2012
For further information: http://www.iccrom.org/eng/news_en/2012_en/field_en/misc_en.shtml
E-mail: icomccspadtomar2013@gmail.com

Become a Volunteer

Take a pledge with us to conserve and preserve our cultural heritage. Come forward to spread awareness among the people about the riches of the past. Do something for your nation. Become a volunteer and we together would form a dynamic group of heritage conservators.

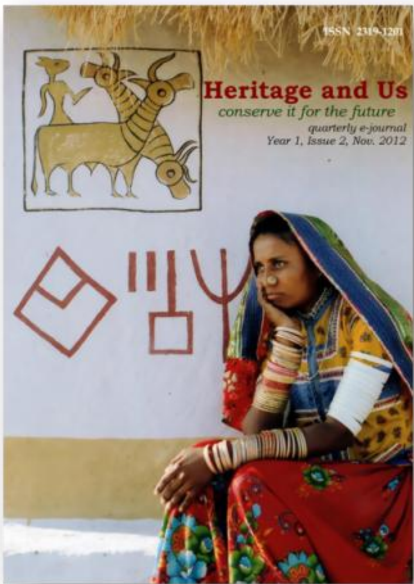
You may write us at heritage.conservators@gmail.com

Be a Contributor

You can contribute research papers, articles, write-ups, reports, book-reviews, photos, etc. for the third issue of **Heritage and Us** which would be released in March 2013. The deadline for the forthcoming issue is **31st December, 2012** but we would appreciate early submissions.

Your contributions may include any of these aspects of cultural heritage -

History;
Archaeology;
Anthropology;
Conservation;
Epigraphy;
Excavation;
Museums and Art Galleries;
Numismatics;
Reports on antiquities or art pieces;
and many more..



For more information please log on to http://heritageconservators.net/e-magazine/
or
write us at heritageandus@gmail.com

